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THE
VIRGINIA MINERAL SPRINGS,

WITH

REMARKS ON THEIR USE,

THE

DISEASES TO WHICH THEY ARE APPLICABLE,

AND IN WHICH

THEY ARE CONTRA-INDICATED,

ACCOMPANIED BY A

MAP OF ROUTES AND DISTANCES.

A NEW WORK.

Second Edition, improved and enlarged.

BY WILLIAM BURKE, M. D.

Quisquis igitur hæc non cognoscet, quomodo, singula se habeant ad hominem
comparata, is neque cognoscere quæ ab ipsi flunt, neque recte uti potest.

Hippoc. Lib. De Vet. Med.

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Entered according to the Act of Congress this eighteenth day of February, in
the year one thousand eight hundred and fifty-three, for

RITCHIES & DUNNAVANT,

In the Clerk's Office of the District Court of the Eastern District of Virginia.

The Author will hereafter be stationed, as *Resident Physician*, at Rockbridge
Alum Springs, where he may be consulted, in person or by letter, as to the
waters adapted to particular cases.

If by letter, the nature of the case should be clearly stated. Prompt atten-
tion will be given to such communications, accompanied by a fee of five dollars.



P R E F A C E .

In the Preface to the first edition, I promised I should take an early occasion to visit the Eastern group of the Virginia Springs, and annex notices of them in any subsequent issue of this work. I now execute this promise, (how imperfectly I am well aware,) and accordingly there will be found in this edition notices of Jordan's White Sulphur, Shannondale, Capon and Berkeley Springs; also an account of the Healing Springs—among the Western group. The Profession and my readers generally will regret that I have been unable to procure analyses of those Springs, but I have found it impossible to obtain them, unless I were to pay the expense out of my own pocket; and that has already been sufficiently lightened by my efforts to illustrate the virtues of the Mineral Waters of Virginia. Through the liberality of John W. Frazier, Esq., and of the late venerable and lamented Dr. Brockenbrough, I am enabled to give interesting analyses of the Rockbridge Alum, Bath Alum and Warm Springs, by that distinguished chemist, Dr. Hayes of Boston. To Messrs. Erskine & Caruthers, proprietors of the Salt Sulphur, I am indebted for an analysis of the "Iodine Salt Sulphur." There will also be found analyses by Prof. Rogers, (not before published,) of the Blue Sulphur and Sweet Springs, for which I am under obligations to Drs. Hunter and Tyndall. So it will be seen that my gleanings in this field have not been altogether unproductive. Perhaps, at a future season, they may be more abundant. Be this as it may, I cannot but feel grateful to the public for their appreciation of my humble labors.

WM. BURKE.

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CHAPTER I.

INTRODUCTORY REMARKS.

Man, made in the image and after the likeness of God, is nevertheless subject to more ailments, liable to more dangers and obnoxious to more enmities than all the inferior animals. But of all his enemies, he himself is the greatest and most formidable. He, to whom is given “dominion over the fish of the sea, and over the fowls of the air, and over the cattle, and over all the earth,” is the veriest slave to the grossest vices, the most perverse passions, and the most debasing appetites. As these are almost infinite, so also the diseases consequent on them are multitudinous, complicated, and difficult to be understood. Did the consequences, in every instance, fall upon the culprit himself, sympathy were less merited ; but, alas ! he frequently imposes on his unhappy descendant—but too often his only inheritance—the heavy burden of his follies and his crimes, and thus, indeed, are the sins of the father visited upon the children to the third and fourth generation.

It is, however, no part of my duty, at present, to moralize on the vices or virtues of mankind. I take

them up as afflicted with numerous *chronic* diseases, and to the treatment of these, by the agency of **MINERAL WATERS**, I mean, in the following pages, to confine my attention.

The treatment of **ACUTE** diseases is the exclusive province of the physician. To his hands alone, where it is practicable, should be committed the important office, in the discharge of which the life of a human being is involved. The science of medicine has, fortunately, made such strides in improvement within the present century, that the physician has now under perfect control diseases, which, in former times, were always formidable, and generally fatal. Yet, perhaps, the average of human life is not increased, since the advancement of civilization and refinement seems to have introduced a large class of diseases unknown to our forefathers. It is when disease degenerates into a chronic form, that the skill of the physician is at fault and frequently powerless, and it is just here that nature, the most beneficent physician, presents from her generous bosom those pure streamlets that restore health and vigor, and elasticity to the afflicted invalid. It is in this condition that Mineral Springs are sought after, and in which it becomes desirable to the invalid to know whither he must direct his course to effect the object he has in view.

The Springs of Western Virginia form a group unrivalled in this, and perhaps in any other country,

as I think will be seen on perusal of the following chapters. Great and acknowledged, however, as is their power over disease, they would be shorn of much of their virtue, had nature placed them in less favorable situations. Had they all been congregated in a large city, it is doubtful whether they would maintain their present reputation. There is much truth in the following remarks of Sir Walter Scott :—
“ The invalid often finds relief from his complaints, less from the healing virtues of the Spa itself, than because his system of ordinary life undergoes an entire change ; in his being removed from his leger and account books—from his legal folios and progresses of title deeds—from his counters and shelves—from whatever else forms the main course of his constant anxiety at home, destroys his appetite, mars the custom of his exercise, deranges the digestive powers and clogs the springs of life.” Who would look for a riddance from his ailments in the murky atmosphere and crowded streets of a city ? It is the sweet country alone that can invigorate the enervated constitution, raise the drooping spirits, calm the agitated mind, inspire the finer emotions of the heart, and impart elasticity and strength to the moral and physical powers. The citizen, like a boy let loose from school, rambles over the fields, ascends the hills, culls wild flowers, and is filled with admiration, pleasure and cheerfulness.

The manner of travelling, too, has much to do

with the success of his efforts to recover health. Steamboats and railroads have, indeed, greatly expedited locomotion, but they are of little value to the invalid, except as means of rapid conveyance to a more salubrious climate. Suppose a dyspeptic to start from Boston for Winchester in Virginia, what possible advantage can he derive from those several hundred miles of travel? He gains nothing from change of air, for he is all the time inhaling the unwholesome atmosphere of a crowded vehicle. The velocity of motion precludes his enjoying the successions of scenery, and he reaches the end of his journey, moody and discontented. But now, arrived in the garden spot of Virginia, and desirous to extend his journey to the Springs, let us transfer him, with five other congenial spirits, into an extra stage-coach. He rolls along the beautiful valley of the Shenandoah, on a fine macadamized road; the pure air of early morning sharpens his appetite, and the novelty of the scenery, the raillery, fun and anecdote of the passengers, the landing at the tavern, the abusing of coffee and biscuits and long-legged chickens—these, and a thousand other charms of a stage-coach, make him forget his acid stomach, and are worth all the pills of the apothecary and the nostrums of empiricism. Now he winds up the ascent of the Warm Spring Mountain, amidst thousands of clusters of the splendid rhododendron, the gay blossoms of the laurestinus and

ever-varying azalia ; now he reaches the summit and sees the world beneath him—mountains and valleys and pastures, houses and men and cattle—all in miniature ; he is delighted and wrapt in meditation, and he inwardly adores the majesty of that Being who is enthroned in the heavens, and who *looketh down* on the high places of the earth. The inward man is now changed ; the feverish melancholy invalid, weaned from his own gloomy reflections and anticipations of evil, is once more converted into a social being, sympathizing in the feelings and pleasures of others and charmed out of fancied or real sufferings.

If there is a scene on this earth calculated to strike the mind with reverential awe, and to raise the soul from grovelling thoughts of self to the contemplation of the God of Nature, it is to stand on the *highest top* of the *highest mountain*, and to look down on pigmy man and his ant-hill habitations, and then to reflect on his vanities and his follies, and the end of all—*his little resting-place*. Never shall I forget the emotions produced by a visit to the summit of the *Salt Pond* mountain, in Giles county, some years ago, with a few friends. Our horizon was extended to upwards of a hundred miles in diameter, limited only by the azure arch of heaven, and presenting to the eye the most sublime spectacle which the human mind can conceive.

— “ It was a hill
Of Paradise the highest, from whose top
The hemisphere of earth, in clearest view,
Stretched out to the amplest reach of prospect, lay.
Not higher that hill, nor wider looking round,
Whereon, for different cause, the tempter set
Our second Adam, in the wilderness,
To shew him all earth’s kingdoms and their glory.”

Similar is the view from the Blue Ridge at Rockfish Gap, with the additional advantage of overlooking a more cultivated and diversified country. In the morning (as from the celebrated Rock on the Warm Spring Mountain) you may see the glorious god of day emerging from his curtains of purple and gold, and shaking from his locks the dewy drops of ocean, and with a benign radiance illumining the welcoming features of his fruitful sister. Here, again, at mellow evening, you may see him descending in majestic dignity beneath the great Appalachian mountains, gilding in his descent the green forest and fleecy clouds, creating a thousand fanciful resemblances. But the view from the point designated is limited in comparison with those that may be obtained by ascending the conical peaks rising several hundred feet higher. That on the southwest was the one I ascended. At the highest *cleared* point was a cluster of disjointed sand-rocks, in the centre of which rose a sturdy oak, which seemed to bid defiance to the tempests; yet the

tempests came and shattered one of its arms, while the humble and shrinking shrubbery around it remained undamaged. So it is in human life; those who expose themselves to its tempestuous hurricanes, must indeed be clad in panoply, if they escape unscathed; while the gentle and retiring are sheltered from its frowns and its malice. The former may be greater benefactors of society, the latter are more happy within themselves.

Carefully observing there was no rattlesnake in juxtaposition, I seated myself upon the highest crag, and then viewed two-thirds of the horizon. Suffice it, now, to say, that if any one shall think proper to follow in my footsteps, he will be amply repaid by the scene I witnessed. But let him go *alone*, and in the solitude of nature, after having surveyed all the magnificence of earth beneath his feet, let him direct his vision to the pure canopy of heaven and feel that no eye can look down upon him but that of his God.

Most men admire the setting sun,
I like him when his course is run.
From the god's parting orbit fly,
Those rays that tinge the western sky,
And sailing clouds in ether mowld,
To forms oft varied, grand and bold.
Behold that frowning, threat'ning height,
Crowned with soft hues of purple light,
And see, beneath, the dread Bastile,
Or Inquisition of Castile,
With massive walls, and ponderous gates,
And windows fenced with iron grates,

And ramparts guarded by a moat,
As at Ullöa or Perote.
See! mountains over mountains rise,
And pierce, in various hues, the skies.
The giants thus, as fables told,
With guilty pride, and daring bold,
By piling mountains, vainly strove
To drive from heaven the mighty Jove.
Lo! next a river gently glides,
And flows in blue and peaceful tides,
Then through great rapids foams its way,
And seems to fill the sky with spray.
There, Alpine hills with snow-drifts cold,
And on them lakes of molten gold.
Here some vast pile or ruined tower,
Such as display'd Baronial power
In feudal days; whose now decay
Marks time's destructive, envious sway.
A thousand gorgeous clouds arise,
And clothe in varied robes the skies,
'Till eve advancing seeks to shroud
Her beauty in a fleecy cloud.
That should not, yet, her charms conceal,
But shew them tempered thro' a veil.
Just then in all her glory shone,
The queen of heaven—the full-orbed moon.
Her beams descend in silvery light,
Upon the forests still and bright,
Smooth as a blooming maiden's face,
On which no eye can wrinkle trace,
And like a good man's conscience clear,
That does not flood or tempest fear.
A cone, of purest, virgin white,
Reaching the zenith in its height,
About midway, an opening gave,
Like the vast entrance of a cave.
Adorned as for occasion great,
Was placed within a bed of state,

The curtains drawn the form displayed
Of a sweet blooming, blushing maid.
There, as she lay upon the bed,
Her arms thrown o'er her beauteous head;
Ariadne's form it seemed to be,
Or Venus rising from the sea.
I gazed, till dazzled at the sight;
The vision faded into night!

Within the range of the Virginia Springs, the climate is much more uniform than that of the Atlantic region, in the same latitudes. The severe north-easterly winds, which extend over the tide-water districts, are arrested in their westward career by the Blue Ridge mountains; or, if they partially affect the Valley of Virginia, the Alleghanies oppose an insuperable barrier. The air, though keen, is always pure, bracing and exhilarating; nor is there ever that alternation of a close, suffocating atmosphere, with intense cold, which is so well known on the Atlantic borders. Extremes of cold or heat are seldom felt, and may be considered exceptions to the general character of the climate.

During a residence of eight years west of the Alleghanies, I never saw the thermometer lower than 6° below zero, and used to consider 6° above as very cold weather. The greatest degree of heat I observed was 97° , but it seldom exceeded 86° , and but for a few hours about mid-day. The usual summer temperature is from 57 to 78° . The nights and

mornings are almost always agreeably cool. It will be readily seen, that where there is often a difference of 20 to 30° in temperature of the morning and afternoon, it becomes necessary to adapt the clothing to the different conditions of the atmosphere; it would therefore be imprudent to go abroad in the early morning thinly clothed. The fogs, always *indices* of fair weather, though perfectly free from miasma, are nevertheless humid, and render woollen clothing comfortable. With this precaution, there is nothing to prevent early rising and exercise.

The rainy season in the Virginia mountains sets in about the 15th of March, and sometimes extends into the month of June. The season for using the waters may be said to commence on the 1st of June, and terminate on the 1st of October. As all through the United States, the difference between the summers, both as regards moisture and temperature, is sometimes very marked, but in a series of years, the average climate is most agreeable, and the air buoyant and invigorating.

Between the 20th and 27th of August, it almost invariably happens that there are two or three days of rainy, blustering, cool weather, after which it clears away and becomes exceedingly pleasant, until the 10th to the 15th of September, when it is not uncommon to see a heavy rain succeeded by two or three cold nights and white frosts. The visitors, alarmed by this little equinoctial demon-

stration, disperse like migrating birds, and leave those beautiful valleys, lately the abodes of gaiety, solitary and silent as a deserted village. They have scarcely crossed the Blue Ridge, however, ere they find their apprehensions of a permanent change in the weather were premature, and now earnestly wish themselves back again among the friends from whom they separated, and the scenes from which they had just departed.

In truth, the most delightful period in the mountains, is that between the 20th of September and the 1st of November. It is the sweet season of Indian Summer, when the woods are clothed in their most gorgeous livery—when Nature seems to enjoy a calm repose, as if to prepare herself for the buffeting storms of approaching winter.

“ Attempered suns arise
Sweet beam’d, and shedding oft through lucid clouds
A pleasing calm; while broad, and brown below,
Extensive harvests hang the heavy head.
Rich, silent, deep, they stand; for not a gale
Rolls its light billows o’er the bending plain;
A calm of plenty!”

CHAPTER II.

NATURAL CURIOSITIES.

As I have been mentioning some of the advantages and inducements presented by Virginia, to invalids and others in pursuit of health or pleasure, it may not be amiss to glance at some of the natural curiosities to be met with in its mountain region.

Among the foremost of these is the passage of James river through the Blue Ridge mountain. I can fancy what Harper's Ferry was in the days of Jefferson; but it is now most sadly marred by the bridges thrown across both rivers, the smoky furnaces, and the *improvements* of civilization. Wilderness, height, evidence of a great convulsion of nature at some distant period, are also characteristics of the scene at James river. Magnificent as the Eastern mountain appears from the road opposite, it must be inconceivably more so from the bed of the river. It is through this gorge that the James river canal is to pass, and no doubt many will be attracted to it by this scene alone. A few miles west is the Natural Bridge. "This bridge is in the county of Rockbridge, to which it

has given name, and affords a public and commodious passage over a valley, which cannot be crossed elsewhere, for a considerable distance. The stream passing under it is called Cedar creek. It is a water of James river, and sufficient in the dryest season to turn a grist-mill, though its fountain is not more than two miles above.”*

The author visited this celebrated spot 27 years ago. At that time it was pretty much in the state described by Mr. Jefferson, the scene itself being rendered more enchanting by the stillness and wildness of surrounding Nature; but the approach of cultivation and the squatting down of a tavern at one end, have divested it in my view, of some portion of its former interest. Loneliness is an important element in my estimate of the sublime, and I must confess, that the usual supply of white-haired little urchins, and woolly-headed darkies, the squealing of pigs, the shrieking of guinea-hens, and even the odor of frying bacon and eggs, (the latter pleasant enough in its place,) destroyed much of my pleasure on a more recent occasion.

The recollections of my first visit have suggested the following lines, in which I have endeavored to express the only opinion I have ever entertained of the manner of its formation.

* Jefferson's Notes on Virginia.

THE NATURAL BRIDGE, VA.*

God said: "Within these hills let there be light!"
The heavens descend in floods, and shew his might.
The rushing waters pierced the fissured rock;
It trembled, cracked and yielded to the shock.
In masses huge it plunged into the wave,
And in the billows found a boisterous grave.
Successive surges lash the rigid sides,
They fall and sink, beneath the roaring tides.
Crash follows crash; the cavern fills below,
The raging torrents swell and backwards flow,
Until, at length, their pressing power and weight
The mighty barrier bring to instant fate.
One gurgling groan—the wildest and the last—
The liquid mountain bears it far and fast.
The graceful arch, on its colossal piers,
Thus stands unscathed by the lapse of years.
All future ages on its dome will gaze,
Race after race its grandeur will amaze.
Here Indian monarchs roamed in olden time,
Viewed the vast span, and felt the true sublime.
Mayhap, too, here his altar one had made,
And in sad accents the GREAT SPIRIT prayed,
To keep the Saxons from his father's grave,
And from their deadly grasp his people save.
"Twas scenes like this that Jefferson had fired,
And his great soul with liberty inspired.
Methinks I see him on its convex stand,
The chart of freedom waving in his hand,
While o'er his head his country's eagle soars,
And underneath the foaming torrent roars.
Fit were the place to think of mighty deeds,
Fruitful the soil to animate those seeds
That genius planted in the patriot's mind,
To grace the earth and elevate mankind.

* These lines were originally inscribed to my greatly esteemed young friend
Miss L. H. Bachman, of Charleston, South Carolina. W. B.

Mark well that spot,* where o'er the beetling steep,
 The statesman lay and looked into its deep—
 Until his temples throbbed with aching pain,
 And he was backwards forced to creep again.
 Thought he not, then, of that fierce flood of strife,
 On which he launched his fortune, honor, life ?
 O'er its rough brow the *Arbor Vitæ* hung,
 And to its shelving sides the cedars clung.
 Upon its summit rose majestic pines,
 And from its fissures sprung ambitious vines.
 No voice he heard except the panther's howl,
 Or perched upon some bough, the lonely owl.
 Wild, as when first amid convulsive throes,
 From earth's deep womb the heaving mountains rose.
 Here gentle muse ! thy sweetest gift bestow,
 That I in words may paint the scene below.
 Above, if terror struck the mind with awe,
 With pleasure, transport all the eye now saw.
 Look to the East you see the *mountains blue*,
 Turn to the West the *Endlesſt* meet your view.
 Here, on your left, you see the pine-crowned height,
 But, on the right, the brow evades your sight.
 Thus, at Aurora's birth, each morning flies
 The lark, to meet his goddess in the skies ;
 In warbling notes to cheer her with his song,
 Unseen on earth and by the vulgar throng.
 But now, dear Helen, with admiring eye,
 Behold that half-ellipse, so light, so high,
 Like the clear arch, of pure ethereal span,
 That as His cov'nant God vouchsafed to man.
 Here let our thoughts to heavenly regions soar,
 And the great Maker in His works adore.
 See at your feet in peaceful streamlets flow,
 The limpid rills, while o'er them fire-flies glow,

* You involuntarily fall upon your hands and feet, creep to the parapet and peep over it. Looking down from this height about a minute, gave me a violent headache.—*Jefferson's Notes on Virginia.*

† The ridge of mountains next beyond the Blue Ridge, called by us the North mountain, is of the greatest extent; for which reason they were named by the Indians the Endless mountains.—*Ibid.*

At summer's eve, and liquid crystals light,
Soft as the dew, and as the diamond bright.
Look where the Hero* of illustrious fame,
High on that pier inscribed his glorious name;
Where mortal man will never write again,
And those who strive, will always strive in vain.
Thou too, my muse, must be prepared to share
The fate of all, beyond their powers who dare.

The Organ Cave, on, or rather under, the road from the White to the Salt Sulphur, is vastly imposing at its entrance, and is said to contain some admirable specimens of stalactitic formations. But the most wonderful of all curiosities of this class is *Weyer's Cave*.

“ Weyer's Cave is the most remarkable cavern at present known. It is situated near the north-eastern extremity of Augusta county, Virginia, seventeen miles from Staunton, sixteen miles from Waynesborough, eight from Mount Sidney, fourteen from Harrisonburg, and thirty-two from the University of Virginia.

Its entrance is in the eastern side of a ridge running parallel with the Blue Ridge, and four miles distant from it. The western declivity of the ridge is very gradual, and the visiter as he approaches from that direction, little imagines, from its appearance, that it embowels one of Nature's masterpieces. The eastern declivity is, however, quite

* In 1823, when the author first visited the Natural Bridge, there was shewn to him a point, quite high, on the right side where Washington was said to have inscribed his name. The thing itself seemed impossible.

† Extract from a pamphlet to be found at the Cave.

precipitous. The guide's house is situated at the northern extremity of this ridge, and is distant eight hundred yards from the entrance of the cave.

In going from the house to the cave, you pass near Madison's Cave, which is in the same ridge, and only three hundred yards from it. Madison's Cave was known and visited as a curiosity long before the discovery of Weyer's, but is now passed by and neglected, as being unworthy of notice, compared with its more imposing rival, although it has had the pen of a Jefferson to describe its beauties.

The ascent from the base of the hill to the mouth of the cave is steep, but is rendered less fatiguing by the zigzag course of the path, which is one hundred and twenty yards in length.

In the year 1804, one Bernard Weyer ranged these hills as a hunter. While pursuing his daily vocation, he found his match in a lawless ground-hog, which not only eluded his efforts, but eventually succeeded in carrying off a trap which had been set for his capture. Prompted by the loss of his trap, Weyer made an assault upon the domicil of the depredator with spade and mattock. A few moments labor brought him to the ante-chamber of this stupendous cavern, where he found his trap deposited.

The entrance was originally small and difficult of access, but the enterprise of the proprietor has ob-

viated these inconveniences. It is now enclosed by a wooden wall, having a door in its centre which admits you into the ante-chamber."

The following lines suggested by a visit to Weyer's Cave, on the 17th of September 1850, and presented to his estimable friend Mrs. E. Bartlett of Richmond, by W. B., are now, with some alterations and additions, respectfully submitted to the reader.

Beauteous art thou, O earth! thy bosom fair.
Green are thy valleys, pure thy mountain air.
Bright are thy dews, the gems of early morn.
Rich are thy fields, in crops of waving corn.
Clear are thy rivers, tranquilly that glide,
To bless the swains, and woo the ocean tide.
Silent thy woods, and grand that Alpine height.
Fearful those clefts, where reigns eternal night.
Sublime that *Bridge*, which with colossal span,
O'er a deep gulf conducts poor sinful man.
Beneath whose arch he may behold a rock,
Unscathed by ages and the lightning's shock.
Emblem of that on which his Saviour stood,
Planted his Church, and nourished with his blood.
But most sublime is vast *Niagara's* roar,
As rushing, bounding, madd'ning, tumbling o'er,
The mighty cataract descends in foam,
Then mounts to heaven, and gems its concave dome.
Now leave, my friend, the balmy, buoyant air,
That God has spread around this earthly sphere.

Confiding, come, forsake ethereal light,
And plunge with me, to depths of darkest night.
Seek *Terra's* womb, in *Weyer's* gorgeous *Cave*,
And stand undaunted, in great Nature's grave.
Though dank the air, within this vast profound,
Though darkness drear invest us all around;

Yet *God* is here ; He watches by our side,
His arm protects, His light will be our guide.
Each room to tell, each object to define,
Would task the talents of the tuneful Nine,
How then may I, in pleasing verse array
Those roofs that sparkle like the milky way ?
O ! how express my wonder and delight,
The shell-room when I saw in blaze of light ?
'Twas heaven supported by columnar spars,
Its arch bespangled with coruscant stars !

Now look, Eliza ! mark bright *Eden's* bower,
Where Nature stands revealed in magic power.
Behind those curtains lies the crystal bed,
To which fair *Eve* our primal father led.
But 'twere pollution by a taper's light,
This *Holy* to expose to mortal sight.

The *Senate Chamber* next attracts the eye,
And *Conscript Fathers* met in conclave high.
Then pause awhile, and let us here survey
These scenes impervious to the god of day.
Behold that crystal, horizontal plain,
Stretched out immense, yet which no props sustain.
To say how formed conjecture does not dare,
Or how it hangs suspended in mid air.
So steady, unsustained, stands over head,
Mahomet's coffin and its mighty dead.
From its cold bed festooning curtains rise,
As sailing clouds invest the starry skies.
But turn to objects of another kind,
And view the emblems of immortal mind.
Who sits majestic in that curule chair,
In patriot pride, but with a brow of care ?
Methinks 'tis *Tully*, from his lips divine,
That lightning poured on wicked *Catiline*.
Ambitious *Julius* there dissembling stands,
And sues for mercy for the robber bands ;
While virtuous *Cato*, in his country's cause,
Sustains the consul and supports the laws.

Perhaps, proud *Albion*! you the council claim,
Memento of your glory and your shame!
What culprit stands indicted at thy bar,
Polluted, stained by plunder spoils and war?
'Tis *Hastings* vile, who played with kings as toys,
And wealth amassed by crushing human joys.
Indignant *Fox*—who never winked at wrong,
But for the right took part against the strong;
From his deep mind enriched with varied stores,
Upon the wretch his thundering volleys pours.
Sheridan—wonder of that glorious age—
The poet, wit, the orator and sage!
See how the victim writhes beneath his lash,
Behold those eyes with wrath and frenzy flash.
Beneath their glance see crouching *Hastings* quail—
His weight to bear his tottering members fail.
He sinks affrighted at his monstrous guilt,
And feels the dagger pierce him to the hilt.

Majestic *Burke*! thou greatest of the great,
In arts and science, and affairs of state;
The friend of man, in every land and clime,
In morals pure, in eloquence sublime!
With fancy's eye, I see your bosom swell,
As on the hapless *Nabob*'s wrongs you dwell.
Now soaring heavenwards in the gorgeous clouds,
Now painting monarchs in their bloody shrouds.
On *Etna*'s sides, so are all climates seen,
Clear streams, fierce torrents, snows, and pastures green.
Calm stands the mountain on its mighty base,
While lava pours in torrents from its vase.
Thus varied learning, wisdom, words of fire,
Flow from those lips that genius doth inspire.
Thus *Edmund*, thou didst scathe a wicked age,
And war on rapine, lust and murder wage!

But now my fancy brings me nearer home,
Than guilty England, or aspiring Rome.
And if awhile it wandered o'er the main,
'Twas only to return with pride again.

Within the bowels of their native land,
Columbia's statesmen in this chamber stand.
To whose great fame I would just homage pay,
And in Elysian light their pow'rs survey.
Firm as the granite of his native state,
There *Webster*, dignified and thoughtful sate.
Behold him calmly, slowly, rising now,
Peace in his eye, and genius on his brow.
He waves his hand, the hall as death is still;
He speaks, his words through ev'ry bosom thrill.
His patriot thoughts in graceful periods flow,
Upon his lips the flames of fancy glow.
A great Ionic pillar there he stands,
A model to all time, and to all lands.

Now see all eyes are turning to the right,
Where stands old *Nestor* girded for the fight.
The aged chieftain casts his glance around,
The gazing crowd are filled with awe profound.
He smiles; the action, like some magic charm,
Dispels all fear, and dissipates alarm.
They see great *Harry* on that glorious field,
Where oft he cast his spear and raised his shield.
They see him now, as in his fervid youth,
Uphold his country with consistent truth.
Undaunted, though with odds he has to cope,
Be leads the last, forlorn, but gallant hope.
He mounts the breach, with *Webster* on his right,
And *Cass* upon his left, a valiant knight.
While dauntless, firm, and with his well-poised spear,
Like brave *Ulysses*, *Foote* brings up the rear.
List to those tones as clear as silver bells,
Hear how that voice in strength and compass swells.
Behold that gesture full of native grace—
See wit and fancy beaming in his face.
His patriot lips pour forth the flowing tide,
He loves his country with a patriot's pride;
Not this, nor that, but every brilliant *STAR*
That lights its banner, both in peace and war.

His periods swell like billows, more, and more,
Now foam like breakers bursting on the shore.
Reason and logic, now, and force prevail,
Sarcastic humor, now, descends like patt'ring hail.
O *Clay!* when death shall consecrate thy name,
How bright the halo that will light thy fame.
Envy will then to darksome caverns creep,
And o'er her patriot son a nation weep!
Others there are to whom I fain would raise,
In grateful verse, the voice of well-bought praise;
But, in his course the sun I cannot stay,
And to his cheering beams I haste away.

The lights grow dim, and sable curtains shroud
The gloomy chamber, and the solemn crowd.
Ah! what is this has changed the scene so soon?
There lies, in death, the virtuous, great *Calhoun!*
His country's Eagle drooped his wings, methought,
And in his beak a sprig of Cypress brought.
Approach, sad bird, and lay it on his bier,
And let the muse bedew it with a tear.
The Southern *Grattan* sleeps an endless sleep;
Well may'st thou mourn, and well his country weep.
But *Carolina!* come, and most of all,
Hold o'er thy son the solemn funeral pall.
Thou wert the idol of his earthly hope;
Thou wert his *Sun*, and he thy *Heliotrope*.
Bear him, ye mourners, to that sunny home,
Beneath those skies where he so loved to roam.
Above his head, and o'er his honored grave,
Let the Palmetto and Magnolia wave.
There zealous pilgrims, at a future day,
Beneath those sacred trees shall homage pay;
Until their bosoms lofty thoughts inspire,
And in their soul they feel the patriot's fire.

To *Congress Hall* the guide next leads the way;
It "stands adjourned," so here we need not stay.
The Tower of Babel meets our wondering eyes,
As, in its pride, it pierced those nether skies.

Imagination, here, all forms may paint,
The church and steeple, bishop, sinner, saint;
Organ and drum, with deep and booming sound,
Sent back by echo, through the hollow ground;
That throne on which the *Wise* of Kings appears,
And knows the mother by a mother's tears;
Damocles' sword, and great Achilles' shield,
And one which mighty Ajax could not wield;
The blood-stained Indian, decked in human scalps,
And great *Napoleon* crossing o'er the Alps;
High mountains, valleys, gorges, glens, and glades,
Snow-hills, and coral banks, and white cascades;
Temples and pyramids, and leaning towers,
The vast Pantheon, and its Pagan powers;
Amid these Gods, a modest Virgin smiled,
The sweet *Madonna* with her SAVIOUR child.

Majestic, grand, sublime, beyond them all,
Is that vast avenue, or wondrous HALL,
To which the father of his country's name,
Just honor gives, and well-deserved fame.
For untold ages, here no footsteps trod,
Full in the centre, all alone with GOD,
A grand stalagmite, of gigantic height,
Meets the enchanted gazer's wildered sight;
In fine proportions, like that patriot sage,
The great APOLLO of a recent age.
But cease my muse, no human pen can trace,
The varied wonders of this awful place.
Yet see, Eliza! mark that point of blue,
In heaven's horizon that now meets our view:
That single gleam of sky, pure, clear, and bright,
Is worth all treasures of perennial night.

CHAPTER III.

SOCIETY.

England has her Bath, and New York her Saratoga—places of fashionable resort that present various attractions to those who live for admiration and the excitement attendant on dissipation ; but they want that calm repose, that freedom from restraint, that omission of conventional usages, which render the society of our Virginia Springs so delightful.

Who would not rather luxuriate in imagination with the inimitable Scott, round the copse-grown precincts of St. Ronan's Well, and contemplate at leisure the various phases and eccentricities of human character, portrayed in this, amongst the most graphic of his creations ; or even repose with Frank Tyrrel, for a season, at the solitary manse of the Cleikum, enjoying the comfortable housewifery of the notable Mrs. Dods, than engage in the routine of follies and absurd ceremonies which constitute the pleasures of a fashionable watering-place.

Saratoga and other Northern watering-places, being brought by railroads into contiguity with large and populous cities and towns, and accessible to persons in every condition of life at a trifling ex-

pense, the mass of visitors is of course composed of all sorts of people. The knowledge of this fact makes men distrustful of each other's standing, and shy and reserved. Such a *matériel* wants, and ever will want, the enchanting ease of manner, dignity of deportment, and air of true gentility, founded on benevolence and forgetfulness of self, which distinguishes Nature's gentleman from the mere cockney and pretender.

At the Virginia Springs, on the contrary, there is a feeling of equality, a relinquishment of formality, a republican simplicity of manners, a reciprocity of kind, courteous, but unpretending civility that renders those places peculiarly agreeable. No one can have failed to observe the difference between large and small communities, as regards sociability; the latter being in some degree individually dependent on each other, cultivate kindly feelings, and form strong attachments, whilst it is not uncommon for the resident of a city to be ignorant of the name of his next-door neighbor. So it is at Mineral Springs; the more populous they are, the less sociable.

The great novelist from whom I have already quoted, makes indeed the following correct observations on the subject: "The society at such places is regulated by their very nature, upon a scheme much more indulgent than that which rules the world of fashion, and the narrow circles of rank in

the metropolis. The titles of rank, birth and fortune are received at the watering-place without any very strict investigation, as adequate to the purpose for which they are preferred ; and as the situation infers a certain degree of intimacy and sociability for the time, so, to whatever height it may have been carried, it is not understood to imply any duration beyond the length of the season. No intimacy can be supposed more close for the time, and more transitory in its endurance, than that which is attached to a watering-place acquaintance." Yet there are numerous instances of permanent and ardent friendship among those rural retreats, and even the wily Cupid not unfrequently speeds his arrows from the shade of some majestic oak.

"Hither come also," says the same author, "the unprincipled gamester, the impostor, the heartless fortune-hunter. But, besides these characters, who are actually dangerous to society, a well-frequented watering-place generally exhibits, for the amusement of the company, and the perplexity and amusement of the inexperienced, a sprinkling of persons called by the newspapers, *eccentric characters*—individuals, namely, who, either from some real derangement of their understanding, or, much more frequently, from an excess of vanity, are ambitious of distinguishing themselves by some striking peculiarity in dress or address, conversation or manners, and perhaps in all. Hither, too, comes the saunterer, anxious to get

rid of that wearisome attendant, *himself*; and hither come both males and females, who, upon a different principle, desire to make themselves double."

If health be the motive, it will readily be conceded that a cheerful spirit, a disposition to be pleased, sympathy with the feelings of others, an entire suspension of care, and a fondness for rural scenes and enjoyments, are essential to the attainment of the object. The moody, selfish man can have no real enjoyment; his heart beats in unison with no human being; he measures mankind by the standard of his own sullen disposition; he is suspicious of motive when treated with cordiality, and when not caressed, he deems his merits overlooked; his pride is wounded, and he takes revenge upon the world by shrouding himself in his offended dignity, and burying himself alive in his own melancholy reflections.

The invalid is especially prone to be low-spirited and home-sick, and when the latter feeling possesses his mind, farewell to improvement! All the faculties of the mind seem absorbed in that one thought, and it is utterly useless to oppose it. Let me therefore advise those who visit the Springs for health, to do so with a firm resolution not to make themselves unhappy about home; or if they distrust their own firmness, let them take with them the objects of so much solicitude; otherwise their friends and themselves will be disappointed of happy results.

The man who considers the vast influence of the passions and the affections over that wonderfully contrived machine, the human body, will not think that I have attached too much importance to this matter. Would to God! it were more generally taken into view, and we should see many of the maladies that are now treated, and often aggravated, by the compounds of the apothecary, readily yield to the more rational prescription of pure air, free exercise, freedom from care, and cheerful society.

CHAPTER IV.

MINERAL WATERS.

Having decided on a visit to the Virginia Springs, the next consideration should be, to enquire what water is adapted to the case. This is, indeed, an enquiry of the utmost importance, as upon its decision may depend not only the recovery or disappointment of the invalid, but an injudicious direction may result in most deplorable consequences.

Whatever scepticism may have existed at a former period among medical men as to the efficiency of mineral waters, no man, in our day, who has any claim to rank as a physician, can call their powers into question ; I shall not therefore enter into any argument on that subject. Unfortunately, however, they are no less potent for evil than good ; and it therefore becomes my duty not only to point out the advantages that may be derived from their proper use, but also the injuries that may result from their improper prescription. Both these duties I mean to perform to the extent of the moderate ability I possess, without fear, favor or prejudice. I have no connection or interest, directly or indirectly, with any of their proprietors, and shall, therefore, be

guided in my estimate of them by my own reflections and observations, derived from an experience of many years. Erroneous opinions I may entertain, but on their honesty, at least, the public may rely.

Mineral Waters, as regards their properties, may be classed under the following heads: *Carbonated*; *Carbonated-Chalybeate*; *Sulphuretted*; *Chalybeate*; and *Saline*; and as regards temperature, into *Cold*, *Warm*, and *Hot*.

Carbonated Waters contain an excess of carbonic acid gas, which causes them to sparkle, and renders them tonic and exhilarating. Of this class is the Sweet Springs of Virginia. The *Red Sweet* comes under the second head, or Carbonated-Chalybeate; as the iron is probably held in solution as a carbonate by the carbonic acid. It is highly stimulant, exhilarating, and tonic.

Sulphuretted Waters are such as contain sulphuretted hydrogen, and are distinguished by the peculiar fetid smell of that gas. The White Sulphur, Salt Sulphur, Red Sulphur, and Blue Sulphur, are examples of this class.

Chalybeate Waters are characterized by a strong inky taste, and by striking a black color with the infusion of galls. Waters of this class are numerous in the United States as well as in Europe. They are powerfully *tonic*.

Saline Waters are those the prominent properties

of which depend on saline impregnation. Saratoga and the Rockbridge and Bath Alum waters are examples of this class; but, indeed, all our mineral waters, in various degrees, come under this head. They are aperient, sometimes purgative, and generally stimulant.

The temperature of all our Virginia Springs belongs to the *Cold*, except the Warm and Hot Springs in Bath county.

These definitions are intended to direct the attention of the reader to my account of such Spring as he may think most probably adapted to the case in question.

My plan is—first to give a brief description of each Spring and its environs, embracing everything I think may interest the reader, without excluding even occasional suggestions of fancy and imagination; for I do not think it necessary to be austere in order to be instructive. I shall therefore endeavor to be governed by the maxim so beautifully expressed, and illustrated in his own writings, by Horace :

He who, with art and with discernment nice,
Delights his reader and imparts advice—
Who blends the useful with his dulcet notes,
From public favor carries all the votes.

This, however, is a consummation rather to be desired than expected.

The second step will be to explain the peculiar

properties of each of those waters as they are known from analysis and experience, with directions how to use them, and in some instances, with cases illustrative of their virtues.

Next will follow a catalogue of the diseases in which they have been found profitable, and again of those in which they are contra-indicated.

Finally, the whole list of chronic diseases will pass under review. The author will give his opinion as to the water suited to each, and will support that opinion, when necessary, by reference to established authorities and analogies to the effects of the most celebrated Springs of Europe.

Before, however, he enters upon the individual Springs, he will devote a brief space to *General Remarks*—which are equally applicable to all mineral waters.

When the patient, under proper advice, has selected, and arrived at the Spring where he expects relief, there are some observances so essential to his success, that in a work professing in some degree to serve as his guide, it would be improper to omit calling attention to them. If he has directions from his family physician, the first question that suggests itself, is, Is he in the precise condition in which that physician saw him? If he be not, what change has taken place, and what new symptoms have occurred? It will readily be understood, that if the journey has been tedious and laborious, as in

visits from the distant States, the invalid may have suffered from a change of water, he may be in a state of over-excitement, or exhaustion, from want of sleep, fatigue, or want of accustomed comforts. He may, from exposure, have taken cold and be in the incipient stage of catarrhal fever. His arterial and nervous system may be abnormally excited. He may have headache, furred tongue; or he may be constipated, or in other respects "*out of sorts.*"

Now is a man in any of these conditions to plunge into the Warm, Hot, or Sweet Spring Bath; or is he to drink deep draughts of White, Salt, or Red Sulphur water? Assuredly, no!

It may be necessary to administer some agent to improve the diseased secretion, or to give a brisk purgative, or to prescribe rest and regimen for two or three days, or even to deplete by general or local bleeding. If the derangement be a slight one, he may possibly be able himself to administer the necessary preparatives, but if it be more serious, he should procure medical advice. It will be the wisest and safest plan, and may save him in the end time and money.

I know there are various rumors circulated to the disadvantage of physicians resident at the Springs. In past times there may have been impositions practised in regard to charges; but I have made some enquiries on this subject, and believe they

are now moderate and uniform. They are necessarily, however, somewhat higher than those of the family physician at home, as the expenses are also greater.

I have touched on this subject, because I have seen persons absolutely lose all the chances of benefit from the waters for want of judicious advice. Distant physicians—at least many of them—know nothing of the Virginia Springs, except as a group. Very frequently, they do not know the difference between the White Sulphur and the Red Sulphur; and often confound the latter with the Red Sweet. When, therefore, a physician, thus ignorant of the distinctive characters of those waters, undertakes to prescribe them, he is as likely to be wrong as right; and, indeed, we see, every season, many instances of such unfortunate mistakes. I spent a large portion of last season at the Salt Sulphur, and was consulted in several cases in which serious mistakes of this kind had been made. In every instance relief resulted from sending the patient to the water adapted to his disease.

Whether he employs a physician or not, let me say to the invalid: "Be in slow haste." Survey the whole ground according to the suggestions I have laid before you. Do not gulp down large quantities of water to expedite a cure. It would be about as wise as the conduct of a man who eats to repletion, in order to get the worth of his money,

or as that of the old negro who swallowed down all the physic left by his master, lest it should go to waste. Be moderate in all things. Take the water so as to insure its gradual diffusion through your system, that you may obtain that invisible and silent *alterative* action which is eventually to eradicate your disease. Go to work coolly, calmly and systematically, and you will own the benefit of the advice. Carry in your mind the following prescription, or something like it, and perhaps it will aid you in a regular plan of conduct:

If the weather and other circumstances admit, rise about 6, throw your cloak on your shoulders, visit the Spring, take a small-sized tumbler of water, move about in a brisk walk; drink again at $6\frac{1}{2}$, continuing moderate exercise—again at 7; breakfast when you can get it, (generally it is about 8, and that is early enough,) but let it be moderate and of suitable quality. In most cases, a nice, tender mutton chop, or a soft-boiled egg, (be sure it is fresh, and not preserved in *lime*,) or venison, or beef-steak, is admissible. Eat stale bread, or corn mush, or hominy—the latter a delightful article to be found at some of the Springs—a cup of black tea, not strong, or a glass of *unskimmed* milk. From the above articles you may make a breakfast good enough for a king—if such an animal must live better than others of his species. You may well dispense with buckwheat cakes floating in butter,

omelets of stale eggs, strong coffee, hot bread, and all the other adjuncts of an epicurean table.

After breakfast, if you can command a carriage, or a horse, take a drive or ride, or amuse yourself as best you may until 12. Eat *no luncheon*. At 12, take a glass of water, walk in the shade, drink again at $12\frac{1}{2}$ —again at 1. Dinner is usually about 2. Eat for *nourishment* and not for luxury. Avoid bad potatoes, cabbage, beets, turnips, onions, salt meat of every description, pastry, fruits, either cooked or in their natural state. Though innocent elsewhere, they are not usually so at Mineral Waters.

Amuse yourself in social intercourse or gentle exercise until 6, take a glass of water—walk or ride until supper—take a cup of black tea or a glass of milk and a cracker. If you are a dancer, you may enjoy it, but in moderation, until 10, then retire to your room. Avoid the gaming table, as you would the road to death, and the gate to Hell.

Such is the *general* prescription I give for invalids. It will readily be seen that it cannot, and indeed ought not, to be carried out in detail in every case. There will be many modifications necessary, which a discreet invalid or his judicious physician will not fail to adopt.

If he finds himself improving, let him remain at the fountain; but if, after a fair trial of the water, taken after the system has been properly prepared, and accompanied by something like the course I

have suggested, the symptoms of his disease become aggravated, or new ones supervene, then he should abandon the use of the water, and try to find another better adapted to his case. But if, by an act of imprudence he renders that noxious which, under more auspicious circumstances, would have been salutary, he should not visit upon it the blame due to his own indiscretion.

It has been made a question how long a mineral water can be used with advantage. Different views are entertained on the subject; but I am convinced no general rule can be given, where so much depends on the disease, its intensity, the habits of the individual, and the effects produced.

That there is a point of *saturation*, there can be no doubt, and when that is reached—indicated by furred tongue, headache, and other unpleasant symptoms—it will be proper to intermit the use of the water for a few days, to take a little blue mass or other medicine, to make an excursion to the adjacent country or neighboring Springs, and again after a week to resume the use of the water. Symptoms indicating this condition are however often produced by some act of imprudence, and when this is the case, the first step is *reform*. With these observances, the season may be spent with advantage at any Spring that suits the patient's case, and I am sure that in cases of long-continued disease, it is folly to expect a radical cure in a few days. These

remarks are no less applicable to the bathing than the drinking waters; prudence being still more necessary in using the former than the latter.

Having now passed through all the preliminaries, I will plunge, at once, *in medias res*; and as the White Sulphur is the centre of this interesting group, as *Delphi* was the *Umbilicus* of the earth, I will make it the starting point in my eccentric orbit.

CHAPTER V.

WHITE SULPHUR SPRINGS.

“ Hæ latebræ dulces, etiam (si credis) amoenæ,
Incolumem tibi me præstent Septembribus horis.”

The lovely valley in which this celebrated spring gushes from the earth, is situated in Greenbrier county, a few miles west of the great Alleghany, and is watered by Howard's creek, a tributary of Greenbrier river. The valley may be said to extend several miles in a direction from N. E. to S. W., and in or near its centre is an extensive lawn, or, as the Greeks would call it, *Paradise*, which is the interesting object we have to describe.

Advancing from the junction of the Warm Springs and Sweet Springs roads, you enter through a narrow neck, and the beautiful vista breaks upon your view. Here, on your right, is a lovely grove and walks leading to the *Colonnade*—an imposing edifice, erected on a hill commanding a view of the valley to the southwest, and of the distant mountains. As you proceed along the public road you have, immediately on your right, an open and pretty lawn, flanked by a beautiful row of cottages, called *Virginia Row*. Across the

centre lawn from this, and parallel with it, on a pretty steep slope of the western hill, is Baltimore Row, consisting of some seven or eight highly ornamented cottages. Forming an angle with the lower end of Virginia Row, and parallel with the road, is Broadway, and across the road, directly opposite is Georgia Row. Proceeding a little farther, you pass the modest but picturesque cottage of Mr. Calwell, (the venerable proprietor,) and through a gate on your right enter the main lawn, studded in every part by most magnificent oaks, around the trunks of which are permanent seats, usually occupied by groups of visitors.

At this entrance is the Dining-house, a one-story unsightly frame building, which, with the Ball-room, a little above, most materially mars the beauty of the landscape. Opposite, along the brow of the hill, are Paradise Row, Louisiana Row and Alabama Row, extending in an irregular line from Baltimore Row already mentioned. At the upper extremity of Virginia Row is Bachelor's Row, and running across the lawn, and spoiling it, is Carolina Row. Besides these, there are Wolf Row and Spring Row,

*"And deep and low,
Is Gaming Row."*

About 100 yards west from the Dining-house is the Spring. Just around it there is a slight depression of the surface, and at the depth of about

six feet the water issues from a stratum of limestone rock. It is a copious stream, discharging probably twenty gallons in a minute. The pool is an octagon, about four feet and a half in diameter, and perhaps four feet deep, enclosed with slabs of freestone. The following description of this fountain was given some years since by Mr. Otis:

“The spring bubbles up from the earth in the lowest part of the valley, and is covered by a tastefully covered Pavilion, being a dome, supported by twelve Ionic columns, and surmounted by a graceful statue of Hygeia, the patron saint of healing, holding in her right hand a cup, as filled with water, and in her left a vegetable or herb. This statue was presented to the establishment by Mr. Henderson, a wealthy planter of Louisiana, who I believe went from New England.

“The Pavilion is surrounded by the grateful shade of old oaks, locusts, and elms; and hither resort, as to a common focus, the converging radii of the crowd, intent upon banishing disease or *ennui*, gaining health or admiration, displaying personal charms or sacrificing to fashion. The invalid, pale, emaciated and wretched, may be seen there at almost every hour, waiting till the giddy dance of the gay and volatile, who came there merely to gratify ‘a truant disposition,’ shall leave the waters free for him to drink and be healed. The feverish flush, the hectic of consumption, the tottering gait of rheu-

matism, the wasted form of the dyspeptic, may all be observed in contrast with the ruddy glow of manly health, the free, elastic step of youthful vigor, the gay smile of unpained hearts, and the loud laugh of mirth that knows not even the check of another's sufferings.

“At about an hour before dinner, the fashionable lounge commences. Then commences the playing of the musicians at the ball-room—a fine band of performers, who amuse the visitants to the Springs an hour at noon, and divide with the waters the attention of the promenaders.”

At this period of the day, let us glance at the company for a few moments. I have already more than once remarked on the society to be met with at the Virginia Springs, and hinted the causes to which its excellence was to be attributed; but, having now reached the focus from which it radiates, I may be excused for dwelling on its phases with a little more minuteness. It is astonishing what a variety of character is presented here, to a close observer; I say *close observer*, because there are some who “have eyes and see not.” To say that all the *elite* of the nation are annually seen here would not be true; but to say that a large portion of them, and of the learning, wit, beauty, elegance and fashion of the States is here assembled, is certainly no exaggeration.

Various are the motives which have brought them

together; but they may be reduced to three heads—health, avarice, and ambition.

Of those actually in pursuit of health, the number is comparatively small, though in course of a season they too form a goodly number, and to these may be added those who are attending on their invalid friends, and those who seek a continuance of health in a favorable climate. It is, however, no want of charity to assert, that ambition, *in some form*, is the motive that actuates a large portion of visitors at fashionable watering-places.

Is there a Presidential nomination in agitation, where else can the aspirant play his card with equal success, or gather with more certainty, the probabilities for or against him? Where, by well-timed flattery and attentions, can he make people more pleased with themselves, and consequently with him? Let us imagine this Presidential candidate taking his mid-day walk to the fountain with his arm through that of his *Nomenclator*.

They meet an elegant couple known to the great man's friend, and he throws a smile of kind recognition into his features, accosts, and introduces them:

“General, I have an unexpected but double pleasure in introducing Mr. and Mrs. C. Mrs. C., Sir, is the daughter of the late venerable D. of Carolina, and this gentleman is the nephew of the Hon. F. G. of Virginia, whom you no doubt knew in your earlier days.”

“ My dear Madam, I am overjoyed at seeing the daughter of my departed friend. We served together, and messed together, in the Congress of 1817, and a noble, talented man he was—the joy and delight of our circle, and the great man among the great men of that day. And in you, my dear sir, I recognise the lineaments of my venerated friend, your uncle, with whom I had many a tilt in honorable debate, in which I am not ashamed to own I was generally vanquished. Where are your quarters? I must have the pleasure of paying my respects.”

“ John, he is a fine-looking old gentleman; don’t you think so; it was pleasant to hear him speak so warmly and flatteringly of my dear father.”

“ Yes, Mary, I think him vastly agreeable, and he seems to be a good judge of character and talents, from the manner in which he spoke of my worthy uncle. It was a lucky accident that threw him in our way; he will undoubtedly be the next President, and as the relatives of us both were his bosom friends, what may not be expected at his hands? He shall have all the influence I can bring to bear upon the election.”

“ Well, John, you are right; I, too, will aid you all I can. I will take Mrs. P. out in my carriage this afternoon; her husband is a delegate to the convention, and you know *her* will is *his* law. I should like vastly to spend a few winters in Washington.”

The scene changes—it is morning—breakfast is just over, and a knot of fashionables are standing on the portico, cigar in mouth, hair smooth, beard combed, planning the amusements of the day:—

“Boy, call my servant.”—“Davy, bring out my buggy and the bay poneys. The blacksmith pricked Xanthus a little yesterday; confound the awkward fellow! is he entirely over it?”

“He yields a little yet, sir.”

“Well then let him rest to-day, and bring my gray mare.”

“The gray mare limps a little too, sir; she got her foot fastened in the stall last night; it is but a trifle, but it would be well to —”

“Well, well, bring *Janus*; after all he is my favorite riding horse. I will show you, gentlemen, a grandson of Randolph’s *Janus*—one of the best bred horses that has ever been in Virginia.”

“Ha! yes, truly, that is a fine horse, see what a fore-arm he has, notice his neck and withers. What a beatiful head! What are his gaits?”

“He trots, canters, paces, gallops, and can walk six miles an hour.”

“If it is not an impertinent question, what do you hold him at?”

“I never set a price upon him.”

“Will you take \$ 300 for him?”

“Ha, ha! that’s good. A friend might have him for \$ 500—but not a cent less.”

“He is mine, sir.”

“Well, I am sorry to part with him, but I have so many of them. See, Davy is blubbering; I am sorry for Davy’s sake too, but his pet must go. I have passed my word and it must now be so.”

In those two we see specimens of the gentleman jockey, and the green youth, who has just come in possession of a large estate, and affects to be a great judge of horses. Davy, too, who cries so good-naturedly is *up to snuff*, and a pinch above it.

Moody and sullen must be the soul of that man, who could not forget here, at least for one hour every day, his stomach, liver, and spleen, and feast his eyes on the lovely beings who congregate here to quaff these living waters. But if there be any such unsocial mortal, I would fain draw him into a better humor with the world, and to this end place him by an old stager, who will introduce to his notice some interesting individuals.

Ha! here is the very personage I desired. Mr. *Pippin* is troubled with acid stomach to-day, and is just in the mood to elicit his sarcasm. He tips Mr. *Goodall*:—“Can you inform me who that straight, starched-looking man is now approaching with a young lady, who seems to be his granddaughter?”

“My good sir, that is Judge L. of A., and the young lady he is so interested in is a lovely girl of 18, to whom he is paying his addresses.”

“Pugh! why he looks like a racking, on which she

might hang her bonnet. See how sleek his wig is. Those teeth are all false. I guess his garments are all wadded. He, he, addressing that pretty creature! why, sir, he is at least—”

“He is, *by his own account*, sir, just 48 last Whitsuntide. It is only a difference of 30 years; that is nothing in our day; it is quite the fashion. Young girls are thoughtless, sometimes; they want some one to look up to. What if this gentleman *has* a few false teeth, and a well-combed wig; they become him. He is a man of fortune and talents, and the young lady will have agreeable companions in his youngest daughters.”

“Youngest daughters! sounds, you will make me angry. It is a sacrifice, sir, a horrid sacrifice—and all for that starched, made up creature, tricked out with dead mens’ bones and hair.”

“Fy, fy, Mr. Pippin, you are ill-natured to-day. He is indeed a little vain, and rather boyish; but widowers, *you know*, are somewhat excusable, if they are a little frisky sometimes. Pray, Mr. Pippin, are you not yourself of that interesting class of persons?”

“Yes, sir; yes, I am a widower, but since I buried Mrs. P.—she was my third and best beloved wife—I have never thought of another.”

“Pray how long is it since that melancholy event?”

“It will be just three months to-morrow; but, sir,

pray tell me who that interesting-looking woman is with a pretty, curly-headed boy by her side? Her manner seems extremely winning. Mark that fascinating smile. How beautifully white her teeth are! Her lips are like two ripe cherries. And what a bust! Ah! there is indeed a woman!"

"So, so, Mr. Pippin, that will do pretty well for a widower of 'three months to-morrow.' No wig, no false teeth, eh! O! you widowers are all of the same chip: now, here am I, an old bachelor as cold as an icicle, while you"—

"Have the heartburn, Mr. Goodall; it is but a symptom of dyspepsia; but, in truth, that *is* a fine-looking woman; can you tell me aught of her history?"

"O yes, I can tell you all about her: She married the first time, for love, a laborious, talented lawyer of New Orleans, but hard work and a bad climate led him to an untimely grave. Some ten years since she gave her hand a second time, to a wealthy old planter, who has left her a widow with an only child, that little boy by her. She is reported to be a *millionaire*, and is again in the market. Who bids?"

"I see you are disposed to be a little merry at my expense, but in truth I feel a little *queer*. As the Mantuan bard expressed it:

‘*Aquosco veteris vestigia flammae.*’

But she is gone. Now tell me who this couple are.

They are decidedly *distingué*. He is a foreign ambassador, I suppose, or some high dignitary. A fine-looking man, but is conscious of it; affects youth, evidently a man of the world, feels his consequence, but looks condescending and gracious. His wife is an intellectual-looking person, much younger, though she seems to desire to conceal the disparity, by her plainness of dress and unassuming manner. Who are they?"

"They are the Hon. R. C. and his lady; they are not long married. Hearken on my right—the starched gentleman seems to envy him; he says C. was a lawyer of extensive practice in Maryland when he himself was yet a boy."

"Whew! it is sheer envy: the starched, upright gentleman is as least as old, and neither is a chicken; both are on the shady side of threescore years. C. seems to enjoy his mortification, and to feel a pride in shewing off his fourth wife. You see, Mr. Pippin, there is a chance for you yet; for, bating the dyspepsia, you are as young and good-looking as either of them."

"But look up the walk, and see approaching the *Belle* of the season and her satellites. Mark the grace of her manner; with what ease she seems to bestow an equal share of her favor on all. Her soul is laughing through her bright, blue eyes, and no doubt the little coquette is laughing in her sleeve at some of the silly pretenders to her hand. Cast

your eye towards yonder elm, where you see two middle-aged men seated. One of them is her father—an industrious, frugal, respectable man, who has accumulated a large fortune, which is quite as magnetic to those young bucks as the young lady's charms, transcendent and acknowledged as they are. The old gentleman's eye follows her with deep interest, and she too, though young, is not to be caught with chaff."

A hundred pictures might be drawn of oddities, absurdities, eccentricities, nonentities, ambitious mas-
mas, anxious papas, fascinating misses, agreeable spinsters, delectable fops, twaddling gossips, and stupid book-makers ; but, as a worthy divine of my acquaintance says, "I have not time for detail."*

In the height of the season, from the 15th of July to the 20th of August, it is a gay, lively and exhilarating scene. The arrivals and departures ; the meeting with old acquaintances, and the forming of new ones ; the congratulation of friends on improved health ; the brilliant array of ladies, on the walks and in the ball-room ; the cheering sounds of a fine band of music ; the various groups and their varied discussions on love, politics and gastronomy ; and in the dining-room, the cursing of bread, abominating the butter, detesting the coffee, disliking the tea, scolding the servants, then the *gal-*

* It may be proper to say that these pictures are altogether creations of imagination.

lopping consumption of mutton, the clashing of knives and forks, the trotting of negroes, the forlorn looks of those neglected, and the self-satisfied air of those who are provided with private dishes; all these might afford subjects of contemplation to the philosopher, and employ the pencil of a Hogarth.

In truth, there is no place where one may see more of human character in a short time. Little-ness and selfishness betray themselves at every turn; while true politeness, founded on its only basis, a good heart, will be visible in all the acts of a high-minded man or benevolent woman. I have often amused myself by watching this extraordinary 15 minutes scene of the dining-room. Only imagine 600 people in one room—all having been helped, eaten their fill, and wiped their mouths in 20 minutes. All the improvements of the day fall short of this wonderful rapidity of mastication and deglutition.

This may be all very well for the hale, robust man, but for a feeble invalid, or a delicate lady, it is vastly uncomfortable. There is, however, no cure for it under the present system; therefore those concerned should try to make the best of it. The visitors themselves are mostly to blame. If all were willing to fare alike, and not have private dishes, the table would be much better served; but this never will happen, while selfishness forms so large an ingredient in the human character.

The lodging-rooms are generally comfortable and

well supplied with the requisite furniture. The bathing establishment is fitted up with neatness, and obviates every objection hitherto made in respect to that inconvenience. At the eastern entrance there is a large *Hotel*—called Mastin's—which also is now under control of the Messrs. Calwell. The entire means of accommodation enables them to take in about 700 persons.

But it is now time to leave these matters and turn to those of greater importance—the properties of the water, and its adaptation to the various diseases that present themselves in search of relief. It is a subject of great interest, and I bespeak the attention and patience of the reader in travelling over the details necessary to illustrate the virtues of this valuable medicinal agent.

Mineral Waters may be conveniently classed under the three following heads: *Stimulants*, *Sedatives*, *Roborants*. Under the first will be found the White Sulphur, the Salt Sulphur and the Blue Sulphur Springs. To the second may be referred the Red Sulphur. In the third are properly placed the Sweet Springs, and the Red Sweet Springs.

Confessedly at the head of all the great Springs of Virginia stands the White Sulphur, and it is therefore highly necessary to have some definite idea of its properties and the manner of its action. In forming an opinion of these we have to be guided by analysis and observation; and although they are

by no means satisfactory guides in every particular, yet by following them we shall not be as apt to fall into the ditch, as by rushing on headlong without the light of either.

As the first step, then, in the guidance of the reader, I take the analysis of Aug. A. Hayes, Esq., of Roxbury, Massachusetts, upon which I have no doubt entire reliance may be placed. In the next place, I will give a *comparative* sketch of the White and Red Sulphur Springs; the latter having been also analysed by the same gentleman. It will then be seen how those two remarkable waters differ, and how entirely opposite they are in many respects.

ANALYSIS.

“ This water is colorless and transparent—when agitated, it sparkles from the disengagement of air bubbles. Taste hepatic, resembling that of a solution of hydro-sulphuric acid in water. Exposed to the atmosphere, the hepatic odour is succeeded by a slight earthy odour. It blackens metals and salts of lead. Compared with pure water, free from air, its specific gravity is 1.00254.

“ 50,000 grains (about 7 pints) of this water contain, in solution, 3.633 water grain measures of gaseous matter, or about $\frac{1}{4}$ of its volume consisting of—

Nitrogen gas,	-	-	1.013
Oxygen gas,	-	-	108
Carbonic acid,	-	-	2.444
Hydro-sulphuric acid,	-	-	68
			—
			3.633

“ One gallon, or 231 cubic inches of the water contain $16 \frac{739}{1000}$ cubic inches of gas, having the proportion of—

Nitrogen gas,	-	-	4.680
Oxygen gas,	-	-	498
Carbonic acid,	-	-	11.290
Hydro-sulphuric acid,	-	-	271
			—
			16.739

“ 50,000 grains of this water contain $115 \frac{735}{1000}$ grains of saline matter, consisting of—

Sulphate of lime,	-	-	67.168
Sulphate of magnesia,	-	-	30.364
Chloride of magnesium,	-	-	859
Carbonate of lime,	-	-	6.060
Organic matter, (dried at 212° F.,)			3.740
Carbonic acid,	-	-	4.584
Silicates, (silica 1.34, potash 18, soda 66, magnesia and a trace oxyd. iron,)	-	-	2.960
			—
			115.735

“ Unlike saline sulphuretted waters generally,

this water contains a minute proportion of chlorine only, the sulphates of lime and magnesia forming nearly ten-elevenths of the saline matter.

" The alkaline bases are also in very small proportion, and seem to be united to the silicious earths, in combination with a peculiar organic matter. The organic matter, in its physical and chemical character, resembles that found in the water of the Red Sulphur Springs, and differs essentially from the organic matter of some thermal waters.

" In ascertaining its weight, it was rendered dry at the temperature of 212° F. When dry, it is a grayish-white, translucent solid. When recently separated from a fluid containing it, it appears as a thin jelly or mucilage, and gives to a large bulk of fluid a mucus-like appearance, with the property of frothing by agitation. It unites with metallic oxides and forms compounds both soluble and insoluble. In most cases an excess of base renders the compound insoluble. The compound with the oxide of silver, is soluble in water; with baryta and lime it does not form a precipitate, while magnesia forms with it a hydrous white, gelatinous mass. In acids it dissolves, the oxy-acids do not change its composition, while they are diluted and cold; by boiling they produce sulphuric acid from its constituent sulphur, and change its carbon to other forms. In contact with earthy sulphates, at a moderate temperature, it produces hydro-sulphuric acid, *and to*

this source that acid contained in the water may be traced. This substance does not rapidly attract oxygen from the atmosphere and from colored compounds, as some other organic compounds do. The proportion of organic matter, like that usually contained in our waters, is in this water very small, until forty-nine-fiftieths of the bulk of a quantity is evaporated, the residual matter does not become colored, and when the saline residue is dried it is of a pale yellow.

“ The medicinal properties of this water are probably due to the action of this organic substance. The hydro-sulphuric acid resulting from its natural action is one of the most active substances within the reach of physicians, *and there are chemical reasons for supposing that, after the water has reached the stomach, similar changes, accompanied by the product of hydro-sulphuric acid, take place.*

“ Substances, having characters similar to those presented by this matter, have been classed with the lower order of living plants. With such matters, this substance does not belong in the state in which it is found in the water, for it there forms compounds, the result of chemical affinities, wholly incompatible with vital action. In its altered state, produced by atmospheric agencies, it may nourish plants and develope the growth of seeds fitted to such a soil as its elements form.

“ AUG. A. HAYES.

“ *Roxbury Laboratory, Feb. 1st, 1842.*”

COMPARATIVE ANALYSIS OF THE RED AND WHITE SULPHUR SPRINGS.

WHITE SULPHUR.

" 50,000 grains (about 7 pints,) of this water contain in solution 3,633 water grain measures of gaseous matter, or about one-fourteenth of its volume, consisting of —

Nitrogen gas,	-	1,013
Oxygen gas,	-	108
Carbonic acid,	-	2,444
Hydro-sulphuric acid,	-	68
	<hr/>	<hr/>
	3,633	
	<hr/>	<hr/>

" 50,000 grains of this water contain 115.735 grains of saline matter, consisting of —

Sulphate of lime,	-	67.168
Sulphate of magnesia,	-	30.364
Chloride of magnesium,		.859
Carbonate of lime,	-	6.060
Organic matter, dried at 212° F.,	-	4.740
Carbonic acid,	-	4.584
Silicates: silica, 1.34, potash, .18, magnesia, and a trace oxyd. iron,		2.960
	<hr/>	<hr/>
	115.735	
	<hr/>	<hr/>

RED SULPHUR.

" 50,000 grains (nearly 7 pints,) of this water contain, dissolved as gases, water grain measure —

Nitrogen gas,	-	1,497
Oxygen gas,	-	260
Carbonic acid,	-	1,245
Hydro-sulphuric acid,		86
	<hr/>	<hr/>
	3,088	
	<hr/>	<hr/>

" 50,000 grains of this water afford, of —

Silicious and earthy matter,	-	70
Sulphate of soda,	-	3.55
Sulphate of lime,	-	47
Carbonate of lime,	-	4.50
Carbonate of magnesia,	-	4.13
Sulphur compound,	-	7.20
	<hr/>	<hr/>

115.735		20.55"
	<hr/>	<hr/>

An inspection of the above comparative tables exhibits some curious and important facts. First, the whole volume of gas in an equal quantity of water (50,000 grains) of the White exceeds that of the Red, by 545 grains. Secondly, the carbonic gas in the White is nearly double that of the Red; thirdly, in nitrogen and oxygen, the Red predominates, and fourthly, (what no one would suspect,

judging from the sense of smell,) there is less sulphuretted hydrogen in the White than the Red, by nearly one-fourth.

Again: there are in the White $115\frac{73.5}{100}$ of saline matter to $20\frac{5.6}{100}$ in the Red, or about five times as much. Included in this amount, however, there is of the peculiar organic matter termed sulphur compound, in the White only $3\frac{74.0}{100}$ —while in the Red there is $7\frac{2.0}{100}$, or nearly double.

A careful review of these *data* will enable us to judge with some accuracy of the probable mode of action of both waters. First, as to the gases: The most palpable agent of course, in all sulphur waters, is that which distinctly marks their character, viz: sulphuretted hydrogen, or hydro-sulphuric acid gas. It is known to be the most active of all the gases found in those waters, and as their constitutional effects on the human system in a state of disease is mainly to be expected from the searching and alterative power of this gas and its combinations, it is essential to understand whether it belongs to the class of stimulants or sedatives. An attempt has been made to characterize it as a "*Nervine Stimulant*," and to establish as a fact that the use of the water fresh from the spring was in many cases highly deleterious, while the same water, after this noxious gas was suffered to escape, became admirably adapted to those cases.

Is sulphuretted hydrogen a stimulant? Hear

the answer: "Sulphuretted hydrogen is a colorless gas, having the odor of putrid eggs; it is most offensive when in small quantity, when a mere trace is present in the air. It is not irritating, but, on the contrary, powerfully narcotic. When set on fire, it burns with a blue flame, producing water and sulphurous acid when the supply of air is abundant, and depositing sulphur when the oxygen is deficient. Mixed with chlorine it is instantly decomposed, with separation of the whole of the sulphur."* Here then is at once an authoritative contradiction of a bold assertion. The agent represented as a stimulant is in fact a powerful sedative, as will more fully appear by the illustrations that follow.

It has been seen by the analysis, that this gas in the Red Sulphur is more abundant by nearly one-fourth than in the White. I have never yet seen any intelligent man who knew anything of the Red Sulphur, that did not give it rank as a sedative. The following quotation from Dr. Moorman admits the less stimulant character of the Red:

"The Red Sulphur is the least stimulating of our sulphur waters, and by some is even regarded as a sedative. It is employed with good effect in many cases for which our other sulphur waters are prescribed, and being less exciting than any other, may be successfully used in some cases in which other waters would be contra-indicated."

* Fowne's Chemistry, p. 161.

The increased odor of the White Sulphur is readily accounted for by the fact already stated by the chemist, that the smaller the quantity of gas there is in the atmosphere the more intense is the smell, while from the same paragraph we learn that when there is a deficiency of oxygen combined with it, it deposits sulphur more readily. I ask the reader now to look at the comparative analysis of the Red and White Sulphur waters. He will see that the oxygen in the Red being more than double that in the White, the *gas* is retained longer, while the smaller amount of oxygen in the White causes the gas to be deposited in the form of sulphur; and this accounts for the more abundant deposit of sulphur by the White than by the Red. These are important facts, all proving the falsity of the unfounded theory that has been so confidently propagated.

This valuable medicinal agent, then, has been wronged, if not slandered. There cannot be a doubt that many try this water, annually, with whom it disagrees, as may any water when improperly used; and in such a case it is the duty of a candid physician to direct his patient to some other Sulphur Spring; or if he has reason to believe, that from some peculiarity or idiosyncrasy, there is no one of those waters adapted to the case, he should direct him to some other of the great family of springs in that region, or should send him back to the comforts and endearments of home.

In relation to the other gases, it appears that carbonic acid largely predominates. It is this, probably, that gives the water that brisk, light feeling in the stomach, which is so generally ascribed to it.

Nitrogen gas, of which it also possesses a considerable volume, is believed to possess of itself very little medicinal power, though it is impossible to say how it may act in combination with other agents. That it has no stimulant tendency, may be inferred from its being found more largely in the Red Sulphur.

We must, therefore, look for the stimulating properties of the White Sulphur and other analogous waters, to something besides the gases, unless indeed the carbonic acid, as is highly probable, contributes to that property. But to the presence of a large amount of saline matter is, no doubt, most of all, owing its stimulant properties, and to the fact that some of the saline ingredients dissolved in carbonic acid, and in well-balanced proportion with the other gases, act not only on the digestive organs, but are carried directly into the system by the arsorbents.

The visible effects of mineral waters are, perspiration, secretion of the mucous surfaces, increased or moderated, and modified excretions of the abdominal viscera, stimulation of the organic powers to a higher grade of action, sedation of over action, and as a consequent of either of the two last, a toni-

fication or invigoration of the system, and its restoration to a normal condition. When these changes occur, they are perceptible to our senses; but that still and silent progress of change or *alterative action* that produces these results is as invisible as man's conscience and motives in the moral world.

From what we know, however, we may draw inferences relative to things we do not know, which if not in every respect satisfactory, yet materially aid us in the development of physical causes and effects. This mode of investigation is daily producing the most extraordinary results; and although there is manifestly a goal beyond which human research and reason cannot pass, yet there is still left an almost infinite field for the exercise of man's ingenuity.

Returning from these digressive reflections to the immediate subject before us, let us endeavor to trace the peculiar mode of action of the White Sulphur water; and as the same remarks will be in a great degree applicable to the Salt Sulphur and other Springs, resembling in their *general* properties this celebrated fountain, there will be less need of dwelling with minuteness on them when I bring them before the reader.

I have shewn that, so far from sulphuretted hydrogen being a stimulant, it is highly sedative, and I illustrated this fact by the Red Sulphur, which, though an acknowledged sedative, contains more of

the gas than the White Sulphur ; now we may see that the preponderating salts in the White are sulphate of lime, sulphate of magnesia (Epsom salts) and carbonate of lime. No one will deny that these are stimulant salts, and if taken without the modifying agency of the sulphuretted hydrogen and the sulphur compound—that bland substance so satisfactorily designated by the chemist—the probability is, that their action would be transient and accompanied by no constitutional change. They would act, no doubt, as Saratoga water, though in an inferior degree, in producing fluid evacuations, with but little or no effect on the liver, spleen, mucous surfaces, or skin. As especially bearing on this point, I make quotation of the following judicious remarks of Dr. Armstrong :

“ The first thing that struck me in regard to the operation of the Harrowgate sulphurous water, was, that the bowels might be opened by it day after day, week after week, without debility being produced ; nay, on the contrary, most patients gained both strength and flesh, notwithstanding they had daily and copious evacuations. This circumstance alone seemed to give the sulphurous water a most decided advantage over the purgatives in common use ; for it must be admitted, that they cannot be long continued in chronic diseases without diminishing the strength. For some time, therefore, I solely attributed the efficacy of the sulphurous water to

its purgative property, together with the peculiarity, that its long-continued exhibition caused no debility; and as for a considerable period the complaints in which I prescribed were chiefly stomachic and hepatic, I was the more confirmed in this opinion as to its operation. But cases of chronic disease fell under my observation at various times, in which the sulphurous water was most decidedly beneficial, and that too where the bowels had been scantily moved; and as the effects in these cases could by no means be attributed to its action on the intestines, I was led to enquire whether it might not have some agency which had escaped my observation. In attending more closely to the changes which the water induced, I found that it acted most powerfully on the secretory glands of the body, but more especially on the liver, on the kidneys, on the mucous coat of the intestines, and on the skin.

“Here a new operation was presented to my enquiry. In reflecting on all the facts which had come before me, I ascertained that this water had removed chronic affections of various internal and external parts; and hence at length the inference followed, that it was really beneficial as a very powerful alterative, and that it had a direct influence over chronic inflammation, wherever it be seated, whether in the viscera or upon the surface of the body. In still pursuing the consideration of the subject, I was fully satisfied that I had arrived at a general

principle in the operation of the sulphurous water: for, some time afterwards, on trial of that at Dinsdale, near Darlington, I found that its effects were also very powerful in chronic inflammations, though it be but slightly laxative. It at once, therefore, occurred to me, that the *chief efficacy of the sulphurous waters of Harrowgate and of Dinsdale depended upon the sulphuretted hydrogen gas which they both contained*; and indeed the principal difference between the two waters is, that the first contains less of the sulphuretted hydrogen gas, but more of the saline ingredients than the last, so that by adding very small doses of purgative salts to the one, it may be made to operate like the other in many cases."

The White Sulphur, like the Harrowgate water, owes its power over the secretory glands, mainly to the sulphuretted hydrogen, while the admirable combination of active salts makes it a resolvent, and imparts to it an expulsive power over the secretions. It is its richness in these salts that renders it superior, in hepatic and other visceral diseases, to the Red Sulphur, while these very ingredients forbid its use in organic diseases of the lungs, the heart and uterus.

If the premises I have adopted be correct, it follows, that relief may be generally expected in the chronic forms of those diseases that will admit of stimulation of the organism. Accordingly, we find that such is in fact the case, as may be seen by in-

spection of the large class in which they are known to be the most efficient. These are :

Diseases of the liver—such as engorgement, induration, concretions, jaundice and other functional aberrations and abnormal conditions, usually the consequences of exposure to miasma and residence in sickly southern localities ; constipation, bilious diarrhœa, dyspepsia in some of its forms ; neuralgia, proceeding from impaired digestion, haemorrhoids and dry piles, chlorosis, cutaneous eruptions generally ; hysteria, chorea, symptomatic paralysis, symptomatic epilepsy, amenorrhœa, chronic rheumatism and gout, anasarca, enlarged spleen, secondary syphilis, gleet, &c.

The use of the water is contra-indicated in affections of the larynx, trachea and bronchia ; in fine, in all irritations of the mucous membrane, whether of the thoracic or abdominal viscera. In phthisis, organic or functional disease of the heart, chronic irritation of the uterus, dysmenorrhœa, menorrhagia, cancer of the uterus, idiopathic epilepsy and paralysis, and all irritations of the brain or spinal marrow.

Those enumerated are only a portion of the diseases that make up the debit and credit account ; and the side to which may be brought the balance in any one season, will mainly depend on the ability and honesty of the medical adviser, on whose shoulders accordingly rests no inconsiderable responsibility.

CHAPTER VI.

I now proceed to glance at some of the diseases I have enumerated as relieved by the White Sulphur.

My readers will of course understand that I do not attempt an elaborate treatise on any of the subjects discussed in this work. My highest ambition is, to throw out some hints that may serve to direct the young, inexperienced physician, or the intelligent patient, capable in some degree of treating himself—if, indeed, there be any one, professional or unprofessional, capable of managing his own case, which I very much doubt, owing to that principle of self-love, and consequent self-indulgence, which is inherent in man.

When Menenius Agrippa quelled the turbulent passions of the Roman populace, by repeating to them the beautiful fable of the stomach and members of the human body, he set forth, in bold relief, the advantages derived through the agency of that great reservoir, from which proceed the elements of that vital current that swells the muscular arm of the patriot, and tinges with a modest blush the

maiden's cheek; but if it had equally suited his purpose, he might have depicted, with no less truthfulness, the wan cheek, the tottering step, the sunken eye, the palsied tongue, produced by pampering it to repletion.

The stomach is situated immediately below the diaphragm, the *cardia* being nearly opposite to the middle of the vertebræ; from thence it bulges out to the left side, the great curvature coming forward and downward; it then passes on to the right side, rising upwards, so that the *pylorus* is not much farther from the diaphragm than the *cardia*; when, therefore, a man is in an erect posture, substances must ascend to pass through the *pylorus*. In its flaccid state it occupies the *epigastrium* and part of the left *hypochondrium*; whilst, when distended, it exchanges its flattened for a rounded form, and fills almost completely the *hypochondrium*, the greater curvature descending towards the umbilicus, particularly on the left side. On account of the resistance opposed by the vertebral column, the posterior surface of the stomach cannot distend itself in that direction; this viscus is therefore wholly carried forward. The dilatation of the stomach produces very important changes in the abdomen. The total volume of the cavity augments; the belly juts out, the abdominal viscera are compressed with greater force. At the same time the diaphragm is pressed towards the breast, and it

descends with some difficulty, whence the respiratory motions are impeded.

The villous or mucous membrane has a whitish-red appearance, and presents a singular velvet-like appearance, from which it has derived its name. Not being elastic, it has numerous folds, or *rugæ*, which supply this deficiency, and serve to accommodate the capacity of the stomach to the bulk of its contents, and at the same time to retain the aliment until it is duly elaborated.

The stomach is abundantly vascular; indeed it may be observed, that few structures receive so much blood as this organ. Four arteries, three of which are considerable, are exclusively devoted to its service, and their several branches, communicate most freely with each other in all directions by innumerable anastomoses; and being tortuous they can accommodate themselves to the full and empty states of the cavity. Nor are its nerves less numerous; they are composed of the eighth pair, and a great many filaments proceeding from the *solar plexus* of the great sympathetic.

The different secretions concerned in digestion are thus enumerated by Dr. Paris:

1st. *Saliva*, which is formed by glands whose excretory ducts open into the mouth. 2d. *Mucous matter*, which results from the action of numerous follicles situated in the interior of the cheeks and palate, upon the back of the tongue, on the anterior

aspect of the *velum* and on the *uvula*. 3d. *Gastric juice*, formed by the glands of the stomach, and the *mucus* secreted by its membrane. 4th. *Mucus intestinalis*, or proper juice of the duodenum and small intestines. 5th. *Bile*, which, being secreted in the liver, and rendered more stimulating in the gall bladder, is afterwards carried into the duodenum. 6th. *Pancreatic juice*, which is secreted in the pancreas, and carried into the duodenum along with the bile; to which, perhaps, may be added the *watery fluids* thrown into the intestines by the exhalants."

If we may be allowed to conceive a condition of the system in which all the organs of digestion accurately perform their respective functions, and harmonise beautifully with each other, like the well-oiled mechanism of the steam engine, we may well believe it a state of *perfect* health; and indeed, it were difficult to connect with such a condition the idea of disease in any organ of the human body. But, as in the engine, besides the wear and tear incident to *matter*, an unskilful and careless engineer, who piles on fuel, raises the steam above the point of security, and neglects the safety valve, hazards a concussion awful to contemplate; or by delaying some repair which at first sight may seem of minor importance, deranges first one portion of the machinery, then another, until all parts become finally implicated and obstructed. So it is with the

human frame ; if from any cause it receives a shock which overpowers its vital energies, it succumbs to the blow. If any of its organs become so impaired as to produce diseased functions, a continuance of that condition will, in the end, react upon the organ, involve other organs and their functions in the derangement, and finally undermine the constitution.

Dyspepsia is most generally produced by a series of errors in diet ; in which, of course, we include improper potations. Every man has a certain degree of vital energy allotted to his organism, which constitutes health, and an addition, or diminution therefrom, elevates or depresses that power so as to constitute an abnormal condition. Let us apply this principle to the stomach, and we can very readily understand how it becomes diseased. Let us suppose the vital energy possessed by the stomach of A., who labors on the canal, to be 20, and that of B., a merchant, who is all day hanging over his desk, to be 15 ; now A. rises at dawn, works until 8 A. M., in all probability has roused into action all the organs of secretion and excretion, and has a relish and appetite for his breakfast. He needs no buckwheat cakes floating in butter, to excite his salivary glands, and he is contented with a plain but plentiful meal. B., on the contrary, sleeps, or rather lies in bed, until 7 A. M., and dresses in time to meet his family at the breakfast-table at 8 ;

his bowels are constipated, his liver is torpid, his kidneys are sluggish, his skin is dry, he has a morbid appetite, he eats hot rolls and butter, beefsteak, or mutton-chops, or likely enough both. A dish of stewed oysters now makes its appearance, and he cannot resist the temptation—some three or four varieties of hot cakes are served, and it is necessary to decide *which is the best*; so he must have a *nibble* at all. Two large cups of coffee accompany this meal, and he is literally crammed to repletion. A. returns to his work, whistles or sings all the while, or cracks a joke with his fellow-laborer; at noon he eats his allowance of bread and fat bacon, at night he again takes his homely meal, and at a proper hour retires to his hard couch and enjoys a depth of slumber that kings may envy. B., after the meal through which we have already accompanied him, walks to his counting-room, pores over his books, has a note to pay in bank, for which he is not prepared, is fretted, or perhaps alarmed, leaves his business at 3 P. M., takes a glass of *toddy* to stimulate his appetite, eats turtle soup, corned beef, roast mutton, baked oysters, boiled fish, wild ducks, bread, potatoes, hominy, celery, variety pudding, crackers and cheese, apples and raisins; he drinks ale, champagne, sherry, and perhaps port. He lounges away his time until supper, takes tea or coffee, writes until late, and then retires to repose! Now observe that the conduct of these two per-

sons is in the inverse ratio of their vital powers. While A. invigorates his digestive organs by just that degree of stimulation which Nature informs him is necessary to repair the waste by the different excretions, B. over-stimulates his already feeble stomach, gives it a task to perform which would oppress even the vigorous powers of A., and by a succession of such abuses lays the foundation of maladies as grievous as they are unmanageable. Will it be said that I have caricatured the habits of B.? Alas! there are too many fac-similes, and I am very certain that I might, with truth, have given a deeper coloring to the picture, in many cases.

If B., whose digestive powers may perhaps be adequate to a slice of cold bread and half a pound of roast beef or mutton, takes the varied dinner I have already described, or something like it, he applies an over-stimulus to the nervous expansion: the nerves notify the brain that an additional supply of blood is necessary; the brain sends its orders to gather the blood from the capillary system, and, guided by anxiety of the nerves, directs the vital current to the mucous coat; next follows plethora, or engorgement; then succeeds irritation of the gastric nerves; then follows an excessive secretion of acid and of air; next come pain, flatulence, heartburn, and *innumerable ills*.

A succession of irritations will produce *inflammation*, and then follows a defective or highly vitiated

secretion ; the pyloric glands no longer discriminate between the portions of chyme presented to them—it enters the duodenum in a vitiated condition—the nerves of this organ demand the sympathies of the liver and pancreas—these are over stimulated, irritated, engorged ; they send through their ducts highly concentrated and acrid secretions, the mucous coat of the intestines is irritated, and the result is mucous diarrhoea or dysentery. In another portion of this work I have to consider the effects produced by disease of the stomach on the lungs and bronchi ; I shall, therefore, for the present only remark, that they are both extensive and important. The heart, the kidneys, the skin, and the brain, are all most seriously affected by derangement of the digestive apparatus.

The symptoms of *Dyspepsia* are, *want of appetite, morbid appetite, nausea* immediately after eating, *vomiting* sour matter frequently without previous nausea, *flatus* and *eructation, cardialgia* or *heartburn, spasm* of the stomach, *pyrosis* or water-brash ; *costiveness*, and almost necessarily, *hypochondriasis*, are attendants upon most cases of dyspepsia. Two or more of these symptoms are invariably present, even in the slightest forms of dyspepsia, and to counteract them and restore normal functions are the objects to be kept in view. It is very plain that the first step to be taken towards such a result is, the reform of any bad habits of food or drink, want

of exercise in the open air, intense application to business, or any other agency that may have been instrumental in inducing and fostering the disease. Medicine can do less, perhaps, in this disease, than any other. Abstinence from improper articles of food or indulgence of any kind ; regularity in taking meals, exercise and sleep ; keeping the external covering of the body in good condition by regular ablutions, and the bath if possible ; encouraging cheerfulness and hopefulness ; travelling in suitable seasons, and especially visiting the Mineral Waters : these are the means to be relied on in the relief of dyspepsia.

From the constitution of the White Sulphur water, it may very reasonably be anticipated that it is well calculated to counteract many of the symptoms I have enumerated, and consequently give prompt relief. Such, indeed, is the case, and accordingly we annually see many cases of relief here. It will not, however, succeed in *every case* ; but when it fails, it is usually in cases complicated with affections of the heart or lungs, or some other organic lesion in which it is contra-indicated.

In these cases, the Red Sulphur, or the Iodine Salt Sulphur, or the Alum Springs, in Bath and Rockbridge counties, will probably be more appropriate ; but in discriminating between them, there is need of some tact and experience. The old Salt Sulphur is also available, and very generally suc-

cessful, in this disease, as we shall see when treating of that spring.

In some cases of dyspepsia, when all the others fail, prompt and decided relief will be had at the *Sweet Springs*, and at the *Red Sweet Springs*, both from drinking and bathing. It will be seen also, that much may be expected from a proper use of the Hot and Warm Springs.

Diseases of the Liver.—This important organ is the seat of numerous deviations from a healthy condition, and seems especially to suffer from high atmospheric temperature. Accordingly we find that in the Southern latitudes, and in locations subject to noxious exhalations, that class of diseases usually denominated *bilious*, is most frequent. The forms of disease of this organ, with which I have to do, are, its functional aberrations and chronic *hepatitis*.

The secretions of bile may be redundant or defective, or they may be acrid, or deficient in stimulative properties. These conditions are dependent, in all probability, on the quantity and quality of the blood presented for secretion, and that is affected by the digestion and chylification, and finally by the poisonous effluvia of a corrupted atmosphere.

In no disease may more be expected from change of climate and habits of life than in diseased functions of the liver, and in no region of the United States is there a summer climate more favorable than the transmontane division of Virginia. Inde-

pendent, then, of all mineral waters, much may be expected from visiting this region; but when the agency of the greatest variety of Mineral Springs may be obtained in connection with climate, our Southern friends have inducements to visit Virginia which are not presented by any other region of the Union.

Now, to say that any one of the Sulphur Springs is a specific, in all varieties of functional diseases of the liver, is to display great ignorance of the action of those agents. I would desire to impress upon the reader that it is not a purgative effect that is desirable in those cases. If it were, those waters that act most freely upon the bowels would be the most prompt to relieve the disease, and Saratoga water would claim preference over all other waters in the United States, in those conditions of the system; but such is not the case. We want an agent that will, in the first place, modify the original cause of the hepatic affection, and produce thereon an alternative effect; and this agent, I have already demonstrated, is *sulphuretted hydrogen, combined with the salts* usually held in solution in the Virginia Sulphur waters.

I agree with Dr. Goode, that there are cases of hepatic functional disease that may be, and are relieved by the Hot Springs alone; but I am also certain, that the surest plan is to visit first a Sulphur water, and to spend the latter portion of the season

at the Hot Springs, or, which in my view is better, to alternate these remedies through the season. Minute portions of blue mass should be used in connection with the Sulphur waters and warm bathing in hepatic diseases. It may be used with great safety, as the sulphuretted hydrogen prevents any permanent constitutional effect, and it will be found a most valuable auxiliary.

The waters of the White and Salt Sulphur will be found the most generally powerful in those *sequelæ* of Southern bilious diseases. It is impossible to visit the White Sulphur and not be daily witness of the improved appearance of those *swallow-faces* that present themselves to the observer.

Engorgement and *induration* of the liver, are, however, sometimes beyond its power, and in such cases the first impulse must be given by the Spout Bath at the Hot Springs. Then the White and Salt Sulphurs may be used and alternated with great advantage.

In some cases of *chronic hepatitis* the Red Sulphur is alone to be alternated with the Hot. In no case, until the liver is completely *emulged*, and all the symptoms of hepatic disease removed, are the Sweet or Red Sweet admissible.

I need scarcely say that *jaundice*, when the consequence of functional aberration of the liver, is under control of the White Sulphur.

CHAPTER VII.

BLUE SULPHUR SPRINGS.

The Blue Sulphur Spring is situated in the county of Greenbrier, in a beautiful valley, through which flows a streamlet bearing the unclassical name of *Muddy Creek*. It is twenty-two miles, in nearly a western direction, from the White Sulphur, on the road to Guyandotte, and thirty-two miles north by east from the Red Sulphur, with which it is now connected by a fine turnpike road.

The improvements consist of a brick hotel 180 feet long and 50 feet wide, 100 feet of which is three stories, with a portico 12 feet wide the whole length. Attached to this building is another, two stories high, 90 by 32 feet; and adjoining this latter is a two story building 150 by 17 feet, also having a two story piazza. The whole of these piazzas connect, making a continuous piazza of 420 feet. This range of buildings affords a dining-room 180 by 30 feet, two large receiving rooms, a ball and drawing-room, bar-room, counting-room, and a large number of very comfortable chambers, most of them

having fire-places. At the north end of the hotel are several brick cottages containing two and three rooms each, for families. At the southern end of the main range of buildings, and running at right angles, are several frame cabins with comfortable apartments for families, and running down the lawn, and interfering very much with its beauty, is also a long range of cabins. I think the establishment can comfortably accommodate 250 persons.

The Spring rises in the centre of the vale, and is covered by a well-designed but badly-executed Temple. The fountain, enclosed in marble slabs, is five feet in diameter, and one of the most beautiful objects imaginable. The sides are covered with a brilliant pink deposit, and the clear, cool, crystalline water seems to say, "Come and drink me." It flows off in a large stream, and is conveyed by pipes to Dr. Martin's baths. The temperature of this water is about 53 degrees.

Dr. Martin, a Frenchman, has erected a bathing establishment at this place. His arrangements are quite extensive and well contrived, and enable him to give plain or medicated baths of any temperature.

The following are given as the ingredients in the water, but as no quantities are annexed, the information is of little value.

Solid Ingredients.

Sulphate of lime,
Sulphate of magnesia,
Sulphate of soda,
Carbonate of lime,
Carbonate of magnesia,
Chloride of magnesium,
Chloride of sodium,
Chloride of calcium,
Hydro-sulphate of sodium and magnesia,
Oxide of iron, existing as proto-sulphate,
Iodine,
Sulphur,
Organic matters.

Gaseous Ingredients.

Sulphuretted hydrogen,
Carbonic acid,
Oxygen,
Nitrogen.

It appears, however, that the catalogue is almost identical with that of the White Sulphur, as indeed may be expected from the similarity of the geological strata.

Its specific gravity is probably greater than that

of the White, and being also a very cold water, the stomach is sometimes oppressed by large draughts of it. I have already, in my general remarks, intimated my opinion as to the quantity of a mineral water that should be drunk at a time; certainly it should not exceed half-a-pint, and one-third would be better in many cases. Half an hour, at least, should intervene between the draughts, and the interval, when practicable, should be employed taking suitable exercise, except in disease of the heart, in which repose is essential, and to which this water is certainly not adapted.

There are very few data to guide us in estimating the actual operation of this water in the diseases for which recourse is usually had to sulphur waters. It is very likely, judging from analogy, that it may be used with advantage in most of the diseases in which the White and Salt Sulphurs are indicated.

In my remarks on the Thermal Waters will be found many considerations that are also applicable to *Vapor Baths*; and while I assent to all that may be said in favor of the latter, under judicious prescription and management, yet I must say that all artificial preparations of steam require even more caution than the natural thermal waters, or the vapors arising from them, and that two things are actually necessary to their success—the capacity of the practitioner for accurate diagnosis, and discretion and judgment in their application. If empirically

prescribed, they may do much and irremediable mischief. It is to be presumed, however, that the gentleman who has had so many years experience in their application is fully competent to conduct his patients to a happy termination of their maladies.

I have heard, while on a visit to the Blue Sulphur, of numerous cases of cure in a vast class of ailments. How many were sent to the *Elysian fields*, I am not able to say, for dead men tell no tales. That I have no fears of this last result in my own case, may be inferred from my intention of placing myself under charge of the learned gentleman next summer, if I fail to soften the rigidity of my muscles at the Thermal Springs. If the Doctor cures me, I shall buy a gold pen to indite his praises.

A special virtue is claimed for this water in the relief of chlorotic females. There may be some ground for this, as from the qualitative analysis it appears to contain *iron*, but I have no personal knowledge of the fact, and therefore give the statement as founded on report.

It would be doing great injustice to omit favorable mention of the comforts and style of living at this place. It is admirably kept by Mr. George W. Buster, one of the stockholders of the company. The female department seems to deserve a special notice, for all its duties are performed with great neatness and kindness by the estimable lady who for several years has had its superintendence.

I can say without hesitation, that the attention and comforts and the agreeable society to be met with here deserve the notice of spring-goers, even were there not to be found here one of the most beautiful fountains in the world.

This fountain well a rivulet might name,
Cooler and purer than a Thracian stream ;
Useful to ease an aching head it flows,
Or when with burning pain the stomach glows.

[*Francis's Horace.*

Dr. John A. Hunter has for several years been resident physician at the Blue Sulphur, and as a gentleman and intelligent medical practitioner, is entitled to the highest confidence. In him the visiter will find a safe adviser, in any case that may require the aid of a physician.

CHAPTER VIII.

RED SULPHUR SPRINGS.

The Red Sulphur Springs are situated in Monroe county, 42 miles from the White Sulphur, 39 miles from the Sweet Springs, 32 miles from the Blue Sulphur, and 17 miles from the Salt Sulphur.

The improvements consist of the hotel, 180 feet by 42, two stories, containing dining-room, drawing-rooms, bar and store-rooms, &c., with a double piazza, the whole length; Alabama Row, 300 feet long, with a piazza the whole length, and a neat two story building at the end; Philadelphia Row, 200 feet long, with a piazza; Bachelor's Row, 104 feet long; Carolina House, 112 feet long and two stories high. Between the two last ranges is a house for the reception of visitors on their arrival. There is a continuous piazza from the extreme end of Philadelphia Row to that of Carolina House, 471 feet in length.

Above Bachelor's Row, on a terrace, is Society Hall, 80 by 42 feet, two stories and a basement, having a portico, supported by nine Ionic columns,

25 feet high, and presenting a very imposing front from the valley. Besides these ranges, there are numerous cottages and offices, and at the entrance a mercantile establishment—but the structure most deserving of notice is the pavilion over the Springs.

This beautiful edifice was erected in 1840, after a design of Mr. Strickland of Philadelphia. It is a dome 42 feet in diameter, supported by 12 Ionic columns. The height from the base to the entablature is about 30 feet. The Springs rise 10 feet beneath the natural level of the valley, and their depth being over 4 feet, you descend $5\frac{1}{2}$ feet by circular steps. The whole height from the level of the water to the top of the dome is about 50 feet. The Springs rise horizontally in two marble reservoirs. They derive their name from a rich lake-color deposit, which is sometimes seen in large quantity on the sides of the fountains. Their waters are conducted into a wooden reservoir in the centre, and thence by pipes to the bathing-house.

I now lay before the reader an elaborate analysis, by Aug. A. Hayes, Esq., of Roxbury, Massachusetts. It is impossible to read this paper without perceiving that it is the result of a zealous and patient investigation by a man intimately conversant with the details of his profession. In some particulars, his results are different from those obtained by Professor Rogers; in others they correspond very remarkably. The organic substance disco-

vered in the water so abundantly, supposed by Mr. Rogers to be analogous with *glaireine*, but called by Mr. Hayes *sulphur compound*, is believed by both to be probably an important cause of the peculiar agency of the water. There can be little doubt, I think, that this property of the water, its extraordinary freedom from saline and earthy impurities, the well-adjusted proportions of its several gases, and its low temperature, are the immediate causes of its remarkable virtues.

“Roxbury Laboratory, 17th Jan. 1842.

“Dr. WILLIAM BURKE.

“Dear Sir,

“Through my friends, J. S. Cook, Esq., and Dr. H. J. Bowditch, I received specimens of the water, red deposit and mud, from the Red Sulphur Springs in Virginia, for chemical analysis. It was with great interest that I engaged in the experiments, as very little was known of the chemical composition of this water, although its medicinal effects had rendered the watering-place a celebrated one. I have sent Mr. Cook an account of the results obtained. Since my observations were communicated, Mr. Cook has allowed me to peruse a copy of a letter from Professor Rogers, dated in May 1835, in which is contained a notice of a peculiar organic matter contained in the water. He

has, therefore, anticipated my discovery by some years. I do not, however, consider this substance identical with baragene or glairine of the Warm Springs of Italy and France. It is, so far as I know, new and peculiar, and seems to be an azotised base *combined* with sulphur, and so combined as to neutralize the distinctive characters of sulphur. The hydro-sulphuric acid gas (sulphurretted hydrogen) found in the water, is produced through the agency of this body; either by its action on the sulphates present, or more probably the substance itself disengages hydro-sulphuric acid, before reaching the surface of the earth, abstracting oxygen from air already dissolved in the water. It is in favor of this view that *less* oxygen is present in this than in common water, the mixture of oxygen and nitrogen in river water often giving 38 per 100 of oxygen. I have minutely examined the saline contents of the water, and the results sent you are those which have been checked by independent experiments. The almost entire absence of chlorine or muriatic acid is a singular fact. I examined every bottle for chlorine, and although in most of them traces were found, they were not constantly observed, and quite as likely to be derived from accidental sources as from the water. The largest quantity found would have carried my decimals to four or five, and is wholly unimportant. The water gives, by tests, indications like those observed when chlorine is present, but the appearance is fallacious.

“I have arranged the acids and basis according to the views of Murray and Berzelius, and experiments shew that in this case these views are correct. The alkaline action of the water is due to the solution of the carbonate of magnesia in carbonic acid, (Murray’s fluid magnesia,) and the peculiar substance distinctive of this water *seems* to be dissolved in this solution.

“You will not fail to observe that the chemical history of the ‘sulphur compound’ is incomplete. My principal object in addressing you at this time is to request you to furnish me with more of the ‘red deposit,’ as a source of it. Professor Rogers supposed the sulphur was deposited and mixed with it. I believe no trace of uncombined sulphur can be found in it, in its fresh state; and when I fermented it, hydro-sulphuric acid was the form it appeared in. I deem this a very important distinction, in a medical point of view, and incline to the opinion, that *all the sulphur in this compound is in a state fitted to be absorbed in the animal system*, as no other known solution or powder of sulphur is, excepting perhaps hydro-sulphuric acid. The opinion, that substances of delicately balanced affinities in their changes give rise to changes in other bodies, is gaining ground among the most learned physiologists and chemists, and such a view of the effects of some of the constituents of mineral waters is perhaps a correct one. I exclude of course all those

waters wherein one stable constituent of great activity gives character to the water, and include those which differ but little in saline constitution from well waters generally, but contain besides a substance in a state of passing from one form of matter to a new form and constitution of matter. These views would be more acceptable, if experiments had demonstrated their truth: for this we must wait.

“ Chemists are indebted to M. Liebig, for a clear exposition of the phenomena attending fermentation and decay. Many had doubtless entertained similar opinions; but for an explanation of some of the most recondite changes, resulting from chemical action, he was the first to propose the *transfer of action from one changing body* to another, which may be alone a stable substance.

“ The chemical history of the sulphur compound, shews that, like yeast, it has the power of inducing changes among the constituents of another body, like those it is itself undergoing. Healthy surfaces and tissues may resist its power, and the water in which it is dissolved may not produce any effect of disturbance on a healthy stomach. Waters containing a minute portion of salt called hydriodate of potash, may be used as an ordinary beverage, without any marked action; but diseased organs and impaired vital action allow of marked effects being produced by such waters. Experiments, made on larger quantities of the deposit of the Spring, de-

monstrate the existence of phosphates in small quantity. The origin of this singular substance, which for past ages has been poured out from the strata, is a question of great interest. The quantity would indicate that the source of supply can only be the organic matter of rocks constituting an extensive formation. Its composition leads me to infer that we are drawing curative effects, as we do articles of beauty and luxury, from an older than the present state of creation.

“The ‘red deposit’ I inferred from chemical observation to be exhibiting signs of vital action. Dr. Rogers had earlier made the observation from inspection. In relation to some compounds referred to above, baragene and glairine, botanists have arranged them as organized beings, in the species *Tremulosa*, and suppose the seeds to be brought by the water to a suitable place for germination: so much for the evidence obtained by the aid of lenses and eyes. On the other hand, it has been demonstrated by chemists, that the substance present in the water is *not* the substance which the botanists have named: lenses and eyes cannot see it; it unites to other bodies and plays a certain part, can be separated, and retains its former properties. The circumstances under which substances of this kind are deposited seem to have been overlooked or misunderstood. In all cases the waters have been slightly changed in constitution, after leaving that point in their courses, below which deposition

never takes place. Thus a water highly charged with carbonic acid, losing a part of this in contact with the atmosphere, will deposit so much of a body held in solution in carbonic acid as was dissolved by that part which has passed off. It is always a very small part of the whole quantity which is deposited; the bulk goes forward with the water. Rocky strata change waters in this way, and when several kinds of stone are wetted by the same water, some produce this change, others do not. In the matter thus deposited, the seeds of organic matter vegetate, often with surprising rapidity. I have seen the silicious shells of animalculæ, after the death of these active little beings, fall to the bottom of a glass vessel, closely stoppered; and within a week, a close, deep-green covering of moss has completely invested and covered the remains.

“ In the Red Sulphur Spring, the red lichen seems to have found in the sulphur compound a congenial soil, for its ramifications extend throughout it. The black mud seems to have changed the sulphur compound, combining through it ferreous salts with the sulphur, and giving oxygen to the other constituents of the compound. I think you will observe that the marble slabs, pieces of wood, metal, &c., act differently in producing or receiving deposition—sunlight and shade often cause different effects.

“ Respectfully,

“ AUG. A. HAYES.”

RED SULPHUR SPRING WATER, VIRGINIA.

Analysis.

This water is perfectly colorless and transparent; when agitated it has an agreeable, sparkling appearance. Its odor is that of hydro-sulphuric acid mixed with that from earth or clay, the latter being retained after the hydro-sulphuric acid is dissipated or destroyed. In taste it is hepatic and slightly bitter. By ebullition it does not immediately become turbid, gases escape, and when reduced in volume by evaporation, deposition takes place.

The specific gravity of this water, compared with pure water at the same temperature, and pressure equal, is 100029. Subjected to the influence of chemical re-agents, it presents the following characters:

- With a solution of chromate of potash, the yellow color becomes greenish yellow.
- “ nitrate of mercury, a grayish brown precipitate is formed.
- “ acetate of lead, the first drops give a brown colored precipitate; an additional quantity, of a yellowish white precipitate.
- “ bisulphate of copper, at first brown, succeeded by a bulky greenish gray precipitate.

With a solution of sulphate of silver, a brown succeeded by a yellowish white and flocculent precipitate.

- “ muriate of baryta, a white precipitate insoluble in acids.
- “ oxalate of ammonia, a white precipitate.
- “ nitrate of silver and ammonia, white precipitate, which becomes brown and purple in sunlight.
- “ nitrate of copper and ammonia, a pale bluish-green precipitate is formed ; after the first few drops of the re-agent have separated, a brown precipitate.
- “ tincture of iodine, added to a large bulk of the water, containing starch dissolved in it, instantly gives a blue color to the starch.

Indications above described afford evidence of hydro-sulphuric acid in the water, while the iodine solution shews that it exists in a relatively small proportion. A bottle of the water was mixed, at the moment of taking it from the spring, with a small quantity of oxide of bismuth, and closely sealed. After the agitation due to carriage, and rest for several weeks, it was found that the particles of oxide of bismuth were rendered brown superficially, and no traces of hydro-sulphuric acid remained in the water. The oxide contained carbonic acid, and less than one-third of a grain of the oxide had ab-

sorbed and combined with all the hydro-sulphuric acid, contained in about fourteen thousand grains of the recently drawn water. By careful experiments, in which the hydro-sulphuric acid was measured by its action on iodine, and the latter weighed in silver compound, the bulk of the hydro-sulphuric acid was ascertained.

Fifty thousand grains (about seven pints) of the water, from which the hydro-sulphuric acid had been removed, afforded by the usual processes 2698 grain measures of gases, or one volume of gases from $18\frac{1}{2}$ volumes of water.

1000 parts of the mixed gases are made up of		
Carbonic acid gas,	-	4.19
Nitrogen gas,	-	4.77
Oxygen gas,	-	1.04
	—	1.000

The two latter gases form the bulk of our atmosphere, in the proportion of 79 nitrogen to 21 oxygen—474 of nitrogen requires 126 oxygen, while the analysis gives 1.04, shewing that oxygen is abstracted by the constituents of the water. All the well-corked bottles had rarefied atmosphere over the water, and when they were pierced, even at 32° F., air would enter.

A well-sealed bottle, containing the hydro-sulphuric acid gas in the water, afforded, for 50,000 parts of water, 3,088 of mixed gases, or one volume of gases from less than 17 volumes of water, consisting of—

Carbonic acid gas,	-	1245
Nitrogen gas,	-	1497
Oxygen gas,	-	260
Hydro-sulphuric acid gas,	-	86
	—	3008

Gaseous contents of a gallon, or 231 cubic inches of the Red Sulphur water:

Carbonic acid,	-	-	5.750
Nitrogen,	-	-	6.916
Oxygen,	-	-	1.201
Hydro-sulphuric acid,	-	-	0.397
—		14.264	

In this analysis the proportion of oxygen gas to the nitrogen is still smaller—a result which accords with other observations made at the same time. The hydro-sulphuric acid gas is the most active of the gases found, while the carbonic acid gas acts the part of an acid in rendering earthy salts soluble in the water.

50,000 grains (about seven pints) of this water afford, by slow evaporation in the air at 200° F., a light yellowish brown matter, which, after it had been carefully dried, weighed $20\frac{5}{100}$ grains. At the temperature of 240° F., this residue becomes changed, and suffers a loss of weight, being reduced to 17.55 grs.

This residue contains the saline part of the water, and is composed of—

Silicious earthy matter, containing traces of oxide of iron and alumina, probably suspended merely,	-	-	-	0.70
Sulphate of soda in a dry state, which forms with the water 802 grs. (Glauber's salts.)		-		3.55
Sulphate of lime,	-	-	-	0.47
Carbonate of lime, dissolved in carbonic acid.	-	-	-	4.50
Carbonate of magnesia, dissolved in carbonic acid, and forming the "Fluid magnesia."		-	-	4.13
A peculiar substance, containing sulphur combined with organic matter,		-		7.20
				<hr/>
				20.55

There are traces of chlorine, or muriatic acid, in some specimens, but at most only 0.13 of chloride of silver could be separated from 10,000 grs. of water. This substance is rarely absent from natural waters which have penetrated the earth.

The peculiar sulphur compound, which forms a part of the saline contents of this water, has never been described, if it has ever before been met with. While in the natural state, and out of contact with atmospheric air, it is dissolved in the water, and forms a permanent solution. Air, acids, and other agents, separate it from the water, in the form of a jelly, and alkaline carbonates, alkalies, water, and

other agents re-dissolve it. It has no acid action on test fluids, but bears that character with bases, and forms compounds analogous to salts. In its decomposition ammonia is formed, and hydro-sulphuric acid is liberated ; or if heat be employed in the experiment, sulphur is separated. It combines with the oxide of silver, and forms a salt of a reddish purple color, in the form of a flocculent precipitate, which dissolves in pure water ; with the oxide of lead, a yellowish white powder, and with the oxide of copper, a pale blue salt in fine powder. In these compounds it remains unaltered, and may be separated from them and transferred to other bases.

Mixed with a small quantity of water, and exposed to the temperature of 80° F., it decomposes, and emits a most offensive odor of putrefying matter, with hydro-sulphuric acid gas. It is to this property that the hydro-sulphuric acid in the water is due, and to the oxidation of a part of this compound most of the sulphuric acid found in the water may be referred.

I have endeavored to ascertain how its elements are arranged, but so small a quantity has been separated, that I could not ensure the purity of any salt formed with it. $1\frac{44}{100}$ grs. gave with oxide of copper $3\frac{44}{100}$ grs. of a dry, bluish-green compound.

With specimens of water, I received a small quantity of "red deposit," which invests the surfaces of the marble slabs forming the basin of the

Spring. It had become changed, although the cork was tightly sealed. When opened for examination, a soft, clay-colored mass, composed of films having a greasy appearance, mixed with some filamentous parts, was found. The odor it exhaled was insupportable; it blackened metals, and when agitated with water, rendered it viscid. With a solution of carbonate of soda it formed a frothy solution, which while cold had the appearance of a solution of soap, and when heated disengaged some ammoniacal vapors, and formed a solution of all excepting some earthy and filamentous parts.

This substance contains the same compound of sulphur and organic matter as that found dissolved in the water of the Spring. I separated from the water the peculiar matter it contains in the form of films, and compared these with those obtained from a soda solution of the altered "red deposit," by the aid of re-agents, and they proved identical. From examination of this altered matter, I have formed the conclusion, that the red color of the matter which covers the slabs is that of moss or lichen, which finds its habitation in the viscid covering produced by the deposition of the sulphur compound.

My early attempts to illustrate this point failed. The substance separated from the water by uniting it to oxide of copper, and afterwards destroying the union by hydro-sulphuric acid, would become, after a few days, covered with vegetation of mosses, un-

like those described as occurring at the Spring. I was led to the conclusion that the spores or seeds of the peculiar "red moss" did not exist in the atmosphere of this place, and must be found in the products of warmer climates. After several trials, I succeeded, by treating rice with a hot dilute solution of carbonate of soda, in obtaining a red-colored moss vegetation, which could be transferred to the decomposing compound on which it flourished. In its union with oxide of copper, no tendency to the production of vegetation was observed, under the most favorable circumstances; but when, after separation, decomposition and decay had progressed, vegetation appeared. I need not ask, if a substance possessing vitality can be combined with oxide of copper and afterwards eliminated by hydro-sulph. acid, and retain its vital powers.

A small specimen of the mud and slime, which appears where the water from the Spring flows, was received. It was a black, tenacious mud, exhaling an odor of hydro-sulphuric acid, mixed with that of earth. The color is due to the sulphuret of iron, formed by the action of the hydro-sulphuric acid on the ferruginous matters contained in the soil, which is a product of a further decomposition of the sulphur compound contained in the water. It forms brown-colored solutions and imperfect salts; its sulphur element is retained; in other respects, it resembles the brown extracts from soils, or the humus and apocrenic acids of Berzelius.

Having studied the chemical characters of the sulphur compound imperfectly, I give only those reactions in the following description, which will serve to shew its want of identity with any of the various substances which have been found in thermal waters and in some European hepatic waters.

Chemical Character of the Sulphur Compound.

I. When separated from a solution by evaporation, or by drying from a gelatinous state, it forms greasy films, which do not darken solutions of lead or copper.

II. In pure water they slowly dissolve, and the solution gives salts of the compound, with the bases.

III. Solution of carbonate of soda dissolves them, and a fluid results which froths by agitation.

IV. In caustic solutions of alkalies, the films dissolve and the solutions are slightly yellow-colored. These solutions have the peculiar odor of soap-leys. They do not blacken metals nor color metallic solutions. Acids decompose the solutions, and the sulphur compound separates in the form of a bulky jelly generally; some oxyacids giving flocks.

V. Nitric acid dissolves the films, and the salts of baryta and lead do not indicate the presence of sulphuric acid. On heating the acid solution, a yellow matter separates, which resembles that produced by

acting on azotized bodies by this agent; sulphuric acid is thus produced, and the yellow precipitate requires a large proportion of nitric acid for its complete oxidation. The result of this action is an acid which gives a deep yellow color, with ammonia in excess.

VI. Chlorine in muriatic acid separates from the sulphur compound some white flakes, which are finally oxidized, and a colorless solution formed, in which sulphuric acid exists.

VII. Alcohol did not dissolve the compound.

Chemical experiments do not shew the medicinal properties of the substances operated upon. But when a substance, the result of delicately balanced affinities, gives in its decomposition an agent of powerful action on the animal system, we may conclude that it is an active ingredient, if found in a water possessed of high curative powers.

I am disposed, therefore, to consider the *sulphur compound* in this water as the principal medicinal agent contained in it, although its action in combination with the other constituents may be necessary to produce the effects for which this water is so justly celebrated.

The following results give in one view the composition of this water.

Gaseous contents of a gallon or 231 cubic inches of the Red Sulphur Spring water:

Carbonic acid,	-	-	5.750
Nitrogen,	-	-	6.916
Oxygen,	-	-	1.201
Hydro-sulphuric acid,	-	-	0.397
		—	14.264

50,000 grains (nearly seven pints) of this water contain, dissolved as gases, (grain measure,)

Carbonic acid,	-	-	1245
Nitrogen,	-	-	1497
Oxygen,	-	-	260
Hydro-sulphuric acid,	-	-	86
		—	3088

grain measures of gases.

50,000 grains of this water afford, of			
Silicious and earthy matter,	-	0.70	
Sulphate of soda,	-	3.55	
Sulphate of lime,	-	0.47	
Carbonate of lime,	-	4.50	
Carbonate of magnesia,	-	4.13	
Sulphur compound,	-	7.20	
Carbonic acid,	-	2.71	
	—	23.26	

Note.—The carbonic acid which is given with the saline matter, being all which the water contains, includes that which is given off as gas by ebullition.

AUGUSTUS A. HAYES.

Roxbury Laboratory, Jan. 14, 1842.

Here we have not only results, but the whole process by which they were obtained. There is no mystification, but at every step of the experiment the reader is instructed and interested. We would especially invite his attention to the curious substance in which Mr. Hayes supposes the virtue of the water mainly to consist.

On this head he makes the following important remark: "I believe no trace of uncombined sulphur can be found in it in its fresh state, and when I fermented it, hydro-sulphuric acid was the form it appeared in. I deem this a very important distinction, in a medical point of view, and incline to the opinion, that all the sulphur in this compound is in a state fitted to be absorbed into the animal system, as no other known solution or powder of sulphur is, excepting perhaps hydro-sulphuric acid."

The introduction of this bland substance in a fluid state into the system *must* exert a great influence on the circulation, and consequently on the mucous surfaces that are in a morbid condition; and when we consider that the greater portion of the fluids taken into the stomach is *directly* conveyed into the circulation by the absorbents, we can at once perceive that the great hygeinic power of this water is dependent on the characteristics enumerated, all of which combined act as a singular alternative in equalizing an excited circulation, in cor-

recting the highly acrid and vitiated secretions of an irritated mucous membrane, by modifying the fluid that supplies the matter for that secretion ; and that by sending to the heart and lungs also a diluted instead of a highly concentrated supply of blood, it calms those organs, by producing in the latter a condition favorable to the proper performance of their functions of oxygenation, and by soothing the irritation of the former, causing it to send forth its stream with a milder impetus, and, moreover, by diffusing more equally the capillary circulation, and in return obtaining not only a more moderate, but a more healthy supply.

Suppose that an irritated, feverish condition of the mucous membrane, or the bronchi, or the alimentary canal exist when this water is taken into the stomach ; it is refrigerant, bland, pure, yet abounding in subtle and invisible power ; what is its probable mode of action ? Why, reasoning from analogy, we must conclude that its first impression is on the nervous expansion with which it comes in contact ; this sends the pleasurable sensation to the brain ; this urges into activity the absorbents ; these convey the tranquilizing influence to the circulation ; and this influence is again returned to the modification of the irritated surfaces. The external capillary circulation is restored to its rightful balance ; the skin and the kidneys perform their appropriate functions ; in a word, the normal condition is re-

stored, and all is smooth and calm as the unruffled ocean.

But if, on the contrary, a hard, harsh water, loaded with saline ingredients, comes in contact with a surface in the condition supposed, what may reasonably be expected? Why, evidently that the nerves will be distressed, the circulation still further depraved, the heart excited to unnatural action, the irritated surface still further engorged, the arterial action increased, respiration hurried, and all the functions of the external and internal organs abnormally performed.

“Through pervious earth the filter'd surges pass,
Rise in sweet springs and lave the freshened grass;
While their smooth seeds an easy passage find,
Lodged in the pores, the rough are left behind.”

The process of filtration described by *Lucretius* gives us a good idea of that effected by the organs of secretion of the human system.

It will readily be seen, then, in chronic affections of the organs of respiration and of the abnormal viscera, if these affections amount to *irritation* or *subacute inflammation*, that the Red Sulphur alone of the sulphur waters is admissible.

The diseases in which the Red Sulphur has been most available are: Chronic laryngitis, chronic bronchitis, haemoptysis, *chronic* phthisis, functional disease of the heart, hypertrophy of the heart, mu-

cous diarrhoea, irritability of the nerves, producing sleeplessness, irritation of the kidneys and bladder, lithic acid gravel, chronic hepatitis, amenorrhœa, dysmenorrhœa, menorrhagia, chronic splenitis, chronic gastritis, hæmorrhoids, scrofula, chronic exanthemata of the skin.

This water being manifestly narcotic, is contraindicated in plethora, apoplexy, epilepsy, chorea, vertigo, and all diseases indicating too great a tendency of blood to the brain. In the acute stages of disease, it is decidedly injurious. In the course of my practice in the neighborhood, it was used in some cases as ordinary drinking water, in the first stages of pleurisy and pneumonia, and in bilious fever, but with invariable aggravation of the symptoms. After the inflammatory stage was subdued, and in incipient convalescence, I found it exceedingly valuable in invigorating the constitution.

CHAPTER IX.

PHTHISIS.

Acute, or “galloping consumption,” as it is frequently called, usually runs its course in from two to nine months, and is wholly unmanageable; and when it fastens on its unhappy victim, there is no alternative but to submit to the decree of that great Being in whose hands are the issues of life and death. It is usually the effect of hereditary taint, roused into morbid action by imperfect nutrition, bad air, exposure, disappointed affection, reverse of fortune, fevers, uterine derangements, and various other causes. It is one before which the system falls prostrate, and in which we can do nothing but smooth, as we may by kind and delicate attentions, the passage of our friend to a brighter and better existence. But the *chronic* form of this disease is happily more under the control of remedies.

As in all diseases there are different grades of intensity, so in tubercular consumption there are grades—1st. Of predisposition; 2d. of tubercular infiltration or deposition; 3d. of development; 4th.

of ulceration ; 5th. of marasmus ; and lastly, there are grades of the power of resistance in different constitutions. This being the case, it is manifest the chances for recovery, perfect or partial, or of a fatal result, are in proportion to such grades. All modern writers agree that cases of recovery are frequent from slight attacks in the latter or suppurative stage.

The great Laënnec makes the following remarks : “But while I admit the incurability of consumption in the early stages, I am convinced, from a great number of facts, that in some rare cases the disease is curable in the latter stages, that is, *after* the softening of the tubercles and the formation of an ulcerous excavation.” Again : “I have at present under my care patients affected with chronic catarrh, and who afford distinctly the sign of pectoriloquism, although they have in no other respect any symptom of consumption. I have met with several other cases wherein this phenomenon was observable along with a slight habitual cough, very little expectoration, and scarcely any marked alteration in the general health.

“In a lady, formerly a patient of Mr. Bayle, eight years since, and whose case was decidedly consumption, (as appears from Mr. Bayle’s notes in her possession,) the sign of pectoriloquism is most distinct. This lady recovered beyond all expectation ; she is now stout, and the only symptom that she has,

at all referable to the lungs, is a slight cough. I have no doubt the cartilaginous excavations exist in this person's lungs."

M. Laënnec then gives several cases illustrative of what he has advanced, from which it appears fully that recovery is not only not impossible, but not unfrequent. Again: "I have often observed the above state of things without knowing to what to attribute it, and without attaching much importance to the appearance; *but after I was convinced of the possibility of cure in the case of ulcerations of the lungs*, I began to fancy that nature might have more ways than one of accomplishing this end, and that, in certain cases, the excavations, after the discharge of their contents by expectoration or absorption, might cicatrize in the same manner as solutions of continuity in other organs, without the previous formation of the demi-cartilaginous membrane.

"In consequence of this idea, I examined these productions more closely, and came to the conclusion, that in every case they might be considered as cicatrices, and that in many cases they could hardly be conceived to be anything else." Again: "In tracing the bronchial tubes near these masses, I have observed that such as held a direction towards them were commonly dilated. In some cases I have been able to trace them, as also blood-vessels, into the fibro-cartilaginous mass, with which, although obliterated, they formed but one substance.

This fact seems to me to leave no doubt of the nature of these productions, *and of the possibility of cicatrization in ulcers of the lungs.*"

These observations are followed by two remarkable cases, which my limits forbid me from quoting, and the author continues his remarks as follows :

" The foregoing observations prove, I think, that tubercles in the lungs are not in every case a necessary and inevitable cause of death ; and that a cure may take place in two different ways, after the formation of an ulcerous excavation : first, by the cavity becoming invested by a new membrane ; and secondly, by the obliteration of the excavation by means of a cicatrix, more or less complete, consisting of cellular, fibrous, or cartilaginous substance."

Again : " When we consider that the formation of tubercles in the lungs seems to be the consequence of a general diathesis ; that these are frequently formed contemporaneously in the intestines, where they ultimately occasion ulceration and colliquative diarrhoea ; and that in some cases also, they exist in the lymphatic glands, the prostate, the muscles, bones, &c., we must be led to believe that the most perfect cure that can take place in consumption is merely temporary.

" Admitting, however, the justness of this conclusion, *in those extreme cases of tubercular diathesis, (which after all are but rare, when compared with the vast number of consumptions,)* we are still entitled to hope for

the cure of many cases of phthisis, or, at least, for such a suspension of their symptoms as may be deemed almost equal to a cure, since the individuals may enjoy such a state of health as may enable them to fulfil all the duties of civil life for years, or until such time as a fresh development of tubercles, at present immature, produces a fresh and final seizure."

Dr. Williams, in his dissertation on pulmonary consumption, says: "Tuberculous consumption is in its ordinary career a chronic disease; but the cases that particularly deserve this title are those in which the disease lasts for years. Bayle and Laënnec record instances in which patients appear to have had the disease thirty or forty years. But it is not to be supposed that in chronic cases the disease is always progressive. It owes its long duration to its limited extent; and although the lungs are never free from some of the lesions described as characteristic of phthisis, yet the continuance of the disease is chiefly marked by many successive attacks and recoveries, dependent on particular developments of new tubercles, and their successive changes and elimination. As the rapid form of the disease occurs chiefly in young subjects, so this in most instances is met with at or after middle age; but it is by no means confined to any period of life.

"It is this chronic or limited form of tubercular disease that affords the best chance for the remedial

powers of nature and art ; and there can be but little doubt that a considerable number of cases are cured."

On this paragraph the American editor, Dr. W. W. Gerhard, adds the following note :

"There is no doubt many such cases recover ; cicatrices or calcareous tubercles remain often in healthy persons."

And, again, Dr. G. in his work on "Diseases of the Chest," makes the following remarks : "Phthisis is therefore strictly a curable disease, notwithstanding that in the majority of cases it terminates fatally at an earlier or later period. This arises not so much from the effects of the first crop of tubercles as from the successive deposits of new ones in different parts of the lung, and indeed of the whole body, or rather from the accompanying fever and irritation. Hence a patient rarely dies of one attack of phthisis, except it be of a very acute form."

The question may now be fairly raised, allowing the curability of consumption under the most favorable circumstances, have cases thus marked and identified by an unmistakeable diagnosis been relieved at the Red Sulphur ? I answer, without hesitation, that they have.

Since the advances in diagnosis by means of *percussion* and *auscultation*, I have examined numerous patients for signs of tubercular deposition and lesion, whom I met at the Red Sulphur, and several

whom I sent thither; and although I do not claim any great skill in these methods of exploring the internal organs, I satisfied myself that there was a tuberculous condition, and I was nevertheless gratified by seeing many such cases receive prompt and decided relief. I trust, however, it will not be inferred that I am disposed to hold forth delusive hopes to any poor invalid who may place reliance on my opinion. I seek not to deceive a human being in this matter. I candidly acknowledge that there are annually many persons presenting themselves at the Red Sulphur, that are not and cannot be benefitted, and whom, if I could have seen them before they left the comforts of home, and the kind attentions of friends, I would have advised against the journey;—but again, I *do say*, that if there *be* hope left, it is in the water of the Red Sulphur.

I agree altogether with the opinion of Laënnec, that it is in the suppurative stage alone that a cure may be looked for. When the tubercle is ripe, and in a condition to find its way into the bronchus, then is the period for the action of the Red Sulphur. It allays the general febrile condition of the system, without impairing the quality of the nutritive fluid, distributes the latter more equally amongst the different tissues and organs, and not only places the lungs in the best condition to shake off the existing disease, but also prevents the deposition of other tubercles.

If, while the tuberculous ulcer is discharging, the condition of the blood can be improved, so as no longer to form a degraded deposit, and the general powers of the system invigorated ; if, moreover, we can find a remedy that will reduce the hurried action of the heart and arteries, without having recourse to depletion ; that will calm the system, whilst it imparts tone and energy to it ; that will restore to the kidneys their true share in the excretions, and prevent extenuation of the body by colligative perspiration ; then we may hope that we have found an agent that will enable the vital powers to resist and shake off the existing disease, and in a great degree remove the tendency to degeneration. *Such an agent, in my opinion, is the Red Sulphur.*

The great principle upon which the Red Sulphur acts is the sedative principle. From whatever elements this principle has been imparted to it, it is manifest that it is the great lever by which it operates.

The letter which I subjoin was written by Dr. Scott of Lexington, Kentucky. The reader will perceive that it bears the impress of truth, and was written for no other object than to do justice to the water, and to benefit the community.

“ RED SULPHUR SPRINGS, V.A.,
Sept. 1841.

“ DEAR SIR,

“ I arrived at the Red Sulphur on the 23d or 24th of last month, with but little *faith* in the efficacy of the *waters*, yet was determined to give them a fair trial, divesting myself as much as possible of preconceived opinions and impressions derived from many reports for and against their medicinal qualities. First day, drank nine half pint tumblers of water in the course of the day, at different periods, and as it is usually directed to be drunk. Second day, twelve, and third day sixteen tumblers full, which last number I continued to take five more successive days. First and second days, they (the waters) operated profusely as a diuretic; third day, very delightfully also on my skin as a diaphoretic, preserving my bowels in a healthy state; on the fifth day, had copious bilious evacuations, as much as I ever experienced from an active *portion of calomel*.

“ At the commencement, and for three months previous, my pulse had been not less than 100 and 110 distinct pulsations in every *minute*, that is 100 beats in the morning, and 110 in the afternoon and evening, attended with occasional cough and hæmorrhage from the lungs. Using the Red Sulphur waters as above stated, my pulse was gradually

lessened in strength and *quickness* on the third day to 70 beats in the morning, and 80 and 84 in the evening, at which it (the pulse) continued regularly, without variation of a single pulsation, during the five more days I remained with you. I used the waters eight successive days only, and I do assure you, sir, that my health has not been at any time in the last two years so perfectly good and free from all uncomfortable feelings.

“My statements cannot be of any advantage amongst strangers to me, but I humbly hope they will be relied on by my friends and acquaintances in the *West* and *Northwest*, where I have been known extensively as a *practitioner of medicine* for near forty years.

“I am, dear sir,

“Very respectfully yours,

“JOSEPH SCOTT.”

The following is the case of Dr. Henry Hunt, who wrote a pamphlet on the Red Sulphur waters.*

In March 1837, I was attacked with a slight haemorrhage from the lungs, attended with other symptoms, indicating a diseased state of those important organs. For a time I neglected to resort to medical treatment, and continued to pursue my pro-

* A Visit to the Red Sulphur Springs of Virginia during the summer of 1837, with Observations on the Waters. By Henry Hunt, M. D.

fessional labors until warned by my failing strength that the disease was gaining ground. By application of the usual remedies, the violence of the symptoms was soon subdued, and in a short time I felt myself sufficiently restored to resume my usual labors; but with the exercise my wonted strength did not return; the cough continued, with occasional pain in the chest, and an uneasy sensation of fulness about the liver, stomach and spleen. These symptoms, after a time, were attended with increased cough, copious morbid expectoration, hectic chills, fever, and night sweats; my weight was reduced from 135 to 115 pounds.

Such was my situation when, about the middle of July, I left home for the Red Sulphur Spring in Virginia. On the third evening I arrived at the Warm Spring, a distance of 230 miles from Washington, and immediately after getting out of the stage, I plunged into the delightful bath of that place—an imprudence against which I would earnestly caution all invalids who arrive after a long journey with the system exhausted by fatigue. The consequences in my own case warrant me in pronouncing it to be fraught with great danger. While in the bath, its effects were very grateful and pleasant; but shortly after leaving it, I became chilly, and this feeling was followed by a hot skin, intense headach, and pain in the chest.

After breakfast the next morning, though still

very unwell, I continued my journey, and arrived before night at the White Sulphur Spring, where I remained two days, drinking freely of the water, which seemed only to increase the cough and pain in the chest, and produce an aggravation of all the other symptoms. Leaving this place on the third morning, I passed Union at noon, dined at the Salt Sulphur, and before sunset arrived at this celebrated fountain, for the benefit of whose waters I had left home.

On the evening of my arrival at the Spring I commenced the use of the water. The next day, during a violent paroxysm of coughing, a coagulum of blood was discharged from the lungs, which was followed by considerable haemorrhage. After this, the cough became less troublesome, but the evening exacerbations of fever and the night sweats continued, my pulse beating 115 strokes to the minute. I confined myself to a low diet, and drank six glasses of the water during the day, namely, two before breakfast, one at 11, A. M., one at 5, P. M., and two at bedtime. The water acted freely on the bowels, and particularly on the secretions of the liver. In ten days, the abdominal viscera were entirely relieved, the pulse reduced to 78, and the fever and night sweats had ceased. The quantity of water was now increased to twelve glasses during the day, taken at the same hours, but in double doses. It acted very gently on the bowels and skin,

but most powerfully as a diuretic. Thus it appears that in small quantities the water acted freely on the bowels, and but little on the kidneys; while in larger quantities it acted freely on the latter, and scarcely affected the former. In fact, I could direct its action to the one or the other at pleasure, by increasing or diminishing the quantity. My cough became better, but my strength still continued feeble, owing to my extremely low diet, and the copious action of the water. Unfortunately I took but little exercise, which I deem all-important while using the waters.

After a residence of three weeks at the Spring, and the constant use of the water during that time, to the manifest alleviation of the most pressing symptoms of my complaint, I was unexpectedly called home, in consequence of the illness of a member of my family. In the commencement of my homeward journey, my weak state compelled me to make very short stages; but as soon as I had crossed the mountains, and resumed my usual mode of diet, my appetite and strength returned rapidly, and I completed the distance of 308 miles in five days, without feeling the slightest inconvenience. The water seemed to produce its good effects in the improvement of my health for months after I had left the Spring.

It is not uncommon for persons to arrive at the Spring, who have not been able to sleep during the

night, even with the aid of opium, who, after drinking the water for a few days, find their nervous irritation so soothed and allayed that no other anodyne is required to procure them full repose for the night. This fact is so striking, that a young lady of this place, in writing to her father from the Red Sulphur, facetiously styles it "Sleepy Hollow."

The soporific effect of the water was most forcibly exemplified in the case of Mr. C. Smith of Georgetown, D. C., a gentleman of the highest respectability, who had been for some time laboring under chronic laryngitis, and had not enjoyed sleep for months, even with the aid of large doses of morphia. He arrived at the Red Sulphur a few days after myself, and immediately commenced a free use of the water. The third day after his arrival, he slept soundly all night, without either coughing or turning in bed, and not only continued to sleep well every night, but was compelled, from the drowsy feeling which it produced, to indulge himself in more than one nap during the day.

In a letter dated some years ago at this Spring, from the late F. W. Gilmer, Esq., professor of law in the University of Virginia, he says: "These waters are far superior to all others. In a few hours they allayed my cough so as to take away all that was unpleasant in it. They diffuse a sense of coolness, freshness, and newer life over the whole system. They abate the pulse most rapidly, remove

fever, lubricate and soften whatever is hard and dry, make one sleep as though he had taken an anodyne, are the safest of all waters, and, indeed, have no ill quality."

The late venerable Dr. R. H. Bradford of Virginia, who practised medicine for many years at the Red Sulphur, in a communication on the subject of the water, remarks: "The effect of this water in reducing the frequency of the pulse, is one of the numerous, singular and powerful properties belonging to it. It lessens arterial action to such a degree, that it seldom fails to remove fever, difficulty of breathing, and pain in the chest. When the patient is restricted to a proper regimen, this water may be taken with greater advantage in pulmonary cases than any other remedy I have ever seen employed for that purpose. It is also an important remedy in enlarged liver and spleen, and in diseases of the mucous membrane generally."

The Rev. W. M. Green of Hillsboro', North Carolina, makes the following communication, dated October 15th, 1837: "Having heard much of the efficacy of the Red Sulphur water, I determined to try it. Accordingly, leaving home early in July, I reached that place about the 10th, confining myself closely to the use of the water, and of the sulphur shower-bath for nine weeks. I had not been at the Spring more than two days before I began to experience a favorable influence on my system

generally, as well as an amelioration of some of the principal symptoms of my complaint. My pulse soon felt the wonder-working power of that mysterious, tempest-stilling agent which resides in those waters. Arterial action was greatly reduced, the nervous system composed, the cough brought down to a mere fractional part of its former proportions, digestion improved, sleep restored, urine rendered colorless, the stricture across the breast less oppressive, night sweats lessened; in a word, every painful and dangerous feature of the disease was moderated, and time allowed to shake off the enemy.

“ The two most striking effects produced by the use of this water were, the evident reduction of arterial action, at the same time that the general system was recovering its tone, and the total extinguishment of that burning thirst which had been tormenting me for more than twelve months. I hesitate not to state here, what may appear incredible to many, that for nearly six months after I returned home, I felt no symptom of thirst, whereas, before my going to the Spring, scarcely fifteen minutes would elapse during the day between my calls for water. This latter effect was still more strikingly experienced in the case of the Rev. Mr. H**t of Halifax county, Va., who assured me, after visiting the Spring a single season, he remained a stranger to thirst.

“ As to the effect on my pulse, although it was

decidedly marked and beneficial, yet there were other cases coming under my own observation of still more striking character. One I distinctly remember, that of a Mr. Boal, a young Irishman, residing in Lynchburg, Va. He came to the Spring by the advice of his physicians, who saw in him the well-known symptoms of pulmonary disease. On his arrival, the average stroke of his pulse was from 110 to 120 in a minute. In *three days*, without the aid of any other means than a free use of the water, it was reduced to the healthful beat of 65 strokes in a minute. The case of Mrs. B****r of Raleigh, is no less remarkable; such was the effect of the water on her arterial system, that a single glass was known to reduce the pulse 10 beats in a minute.

“ My usual habit was to drink three or four glasses of the water before breakfast, three at 11 or 12 o’clock, two about 5 o’clock in the afternoon, and two on going to bed. I am convinced that what was taken late at night, and very early in the morning, was more efficacious than all the rest taken during the day. My exercise consisted in a ride of three miles before breakfast on horseback, another about sunset in my carriage, and in the interval an occasional game at the shuffle-board—a game, though not very refined, unquestionably admirably adapted to exercise a weak chest.

“ It may be well to mention here, that on my re-

turn home my appearance was so little improved, as to produce an impression among my friends that my trip had been without benefit. Nor was the improvement which really had been produced, perceived in its extent, even by myself, until I had been at home a week or two. I mention this for the encouragement of other invalids, who return home dejected and hopeless, because they do not experience the immediate good effects of this and other sulphur waters. The effect is, in many cases, felt after the fatigue of the journey is over, and the noisy bustle of the watering-place forgotten amidst the comfort and quiet of home. I will only add, that after my return, I was enabled occasionally to occupy my pulpit, and to enjoy the society of my friends.

“The next season I sought the mountains again, finding my pulmonary symptoms removed. A third visit, two years after the second, served to remove every unpleasant symptom, and put the blessing of health once more in my reach. At this moment, the only remnant of my disease, which all my friends, and nearly all my physicians, pronounced phthisis pulmonalis, is an appetite which often needs the bridle of just moderation.

“To Him who preserved me be all honor and praise.”

Mr. James Boal of Lynchburg, who lost two brothers by pulmonary consumption, in a commu-

nication dated Red Sulphur, August 5th, 1837, states: "A change of life, from being an active farmer to that of a sedentary store-keeper, produced constipation and general debility, (especially in my arms and knees,) a dry, tickling sensation in the throat, slight cough, and but little expectoration. The tightness increased, until riding a refractory horse, I had an attack of haemorrhage. The discharge at first was pretty copious, of a scarlet, frothy appearance, moderating to a mixture of bloody phlegm. My nights were passed with but little sleep, and that disturbed by troublesome dreams. In the month of June 1828, had an attack of diarrhoea, and was very much reduced.

"About the 1st of July 1828, I visited the Red Sulphur Spring. My pulse on my arrival (when free from excitement) was about 120 pulsations in a minute. Commenced drinking the water, and in one week my pulse was reduced to 65 strokes in a minute, with an improvement in my strength and feelings generally. Supposing my cure effected, I omitted the use of the water for a few days, and found my pulse increasing in frequency. I again used it three weeks longer, when my pulse was reduced to its former standard of 65 strokes in a minute. My course of diet—for breakfast, dried toast and boiled milk, or black tea; for dinner, a little venison or mutton, rice, or cold wheat bread; for supper, cold rye mush and milk, always guard-

ing against rich sauces or pastry: took exercise in the open air. My plan was, to drink freely, say six or eight glasses of the water before breakfast, keeping in constant motion. The general operation of the water was that of a diuretic, and by taking exercise perspiration was very copious. My bowels were regular, once a day, and have continued so (except from casual indisposition) ever since.

“I visited the Red Sulphur in the summer of 1829, and had my general health so completely restored, that I am now here, in August 1837, on a visit to my old friend and benefactor, in perfect health.”

The following communication is from Chief Justice Taney, of the Supreme Court U. S., dated Baltimore, January 8th, 1838:

“The information you have received as to the benefit derived from the Red Sulphur Spring by Mrs. Taney and myself, is correct. We spent six weeks or more there, in the summer of 1835, and both of us were in bad health when we went there. The journey, however, was taken on Mrs. Taney’s account, and by the advice of Dr. Potter and Dr. Buckler. Her health had been failing for several years, and her lungs supposed to be seriously threatened. She complained of a pain in the breast, coughed a good deal, and had an excited and quick pulse. The alarming symptoms were entirely removed by her visit to the Red Sulphur, and she has since enjoyed her ordinary health.

"It is proper, perhaps, to remark, that although Mrs. Taney felt in some degree the benefit of the water while she remained at the Spring, yet we were not sensible of the extent of the improvement until some time after our return home. Both of us have since had much better health than we had known for years before, and we both have great confidence in the efficacy of those waters."

CHAPTER X.

TREATMENT.

Having now, I think, conclusively proved, not only that tubercular consumption is not *incurable*, but that the Red Sulphur water affords the best chances for cure or relief, I feel it incumbent upon me to make a few observations on the treatment of that disease.

I have always been of the opinion, that *too much practice* has been the great error of the profession in their attempt to counteract its progress. Gentlemen of the *Sangrado* family seem to think that while there is an ounce of blood in the body they must continue to cup, and leech, and phlebotomize their unfortunate patient, when, in fact, it is for want of blood, and from the defective quality of what he has, that his life is ebbing away to its kindred earth, as the tide returns to the bosom of the ocean. I do not say this is so in all cases, but I maintain, that the vast majority of cases of tubercular consumption are dependent on *constitutional debility*, and that, if you imprudently add to this condition by untim-

ly depletion, you at once prostrate those vital powers, which otherwise might have made some struggle against the enemy.

Do I then deny the utility of depletion altogether ? By no means. If there be a congested state of the blood vessels, or any other indication absolutely demanding blood-letting, it should not be delayed. I am not arguing against a cautious and judicious depletion, but I protest against the practice of some physicians in sticking their lancet, upon all and every occasion, into their unfortunate patients.

The attention should first be directed to the cause of the patient's condition, and to the removal or modification of that cause. Nature, having a horror of dissolution, struggles to maintain herself against the foe : a feather thrown into the balance for or against her, may decide her fate. Oh ! what a responsibility rests upon him who undertakes to correct her aberrations, and lead her back to the way she should go. It is not to be denied that tuberculous or calculous deposits in the lungs produce inflammation, and that sometimes it is so serious as to demand locally depleting remedies ; but here we should stop, else we throw open the gates that otherwise may have opposed *some* resistance, however feeble, to the assailant. It is agreed by all, that in early stages of chronic consumption a change to the country air is proper. Now, it is evident, if any location combines all the advantages of a good climate

with an agent whose power in this disease has been ascertained, it affords *all* the chances which a change of residence can offer.

In the early part of this work, I took the occasion to give my own experience of the climate of the mountains of Virginia; and I here repeat, it cannot be surpassed, from the 1st of June to the 15th of November. In some cases of asthma it is unsuited, on account of its elevation; but, sheltered as it is from the northeasterly winds of our seaboard, it scarcely feels the equinoctial tempests, and the air is always pure, balmy, and invigorating.

I have already given my views of the species of diet which generally suits those who use mineral waters. At this Spring there can be no doubt that an act of imprudence may be more detrimental than at any other. Itself a sedative, if, under its use, the invalid gorges himself with a stimulating diet, it is disturbed in its operations, and, from being originally a sedative, may, by abuse, be converted into a stimulant. In the first stage, mild farinaceous diet is that pointed out by nature; in the latter stages more nutriment, and sometimes even a stimulant, is admissible.

The use of the Red Sulphur water, as I have recommended it, under the best circumstances of judicious management, suitable exercise, prudence in diet, and a residence during the winter in a mild climate, may, under Providence, restore many interesting persons to usefulness and their friends.

While some have been sceptical as to the value of the Red Sulphur water in tubercular consumption, others seem desirous to make the impression that it is good for *nothing else*.

Now, I think I have already demonstrated, not only that it is valuable in consumption, but that, acting on the human system not as a *specific*, but on great general principles, it is equally available in all cases of sub-acute inflammation and irritable condition of the system, whether produced by morbid function or organic lesion of some organ. That man, therefore, who acknowledges its value in diseases of the chest, and refuses his confidence in kindred diseases, can have but a faint idea of the nice physiological relations of the human body, of the pathological changes and complications induced by abnormal function, or of the influences exerted by remedial agents in restoring the balances that had more or less varied from the healthy standard. I shall conclude my notice of this water by taking a cursory view of the more important diseases to which it is applicable, and shall then leave its reputation to the great arbiter of all such questions—*public opinion*.

Chronic laryngitis may range from simple inflammation to ulceration of the mucous membrane, cartilages, and vocal ligaments, and even to the destruction of these parts. It sometimes attends tubercular disease of the lungs, and sometimes the

larynx itself is the original seat of deposition of tubercles. The prognosis is of course dependent on the mildness or intensity of the disease, and on the constitutional ability to resist its progress. The Red Sulphur will be found a powerful auxiliary in this disease. I have witnessed many most interesting recoveries by the use of this water in apparently very bad cases.

It seems, from the following interesting extract from MM. Trosseau and Beloc, the distinguished authors of a prize essay on Laryngeal Phthisis, &c., before the Royal Academy of France, that the waters of Bonnes and Cauterets, in the Pyrenees, are also celebrated for the cure of this disease :

*“ Sulphur; Sulphurous Mineral Waters.—*Many physicians, chiefly those who have embraced the opinions of the new French school, consider as almost fabulous the cases of cure reported by Borden and many others, effected by the waters of Bonnes and Cauterets. But they who have studied the effects of the Pyrenean waters upon the spot, they who have often sent to them their patients, evidently attacked with pulmonary tubercles, will acknowledge the admirable cures which have been annually effected by this powerful means. Therefore we should never neglect the use of Sulphurous Mineral Waters, whether natural or artificial, in the treatment of various forms of laryngeal phthisis. Although secondary, they may, unaided, effect a

cure in the early stages of disease. We select the following case from a host of others :

“ Mr. D., captain of artillery, thirty-four years old, was born of tubercular parents. His voice is rather grave, and not very strong, except in the high notes. He attended balls and soirées, and was much in the world for three months, when he perceived that his voice was hoarse, and complete aphonia soon followed. There was no expectoration or pain in the larynx, and the general health continued excellent, only he was greatly fatigued by the severe efforts that were necessary to make himself understood. There was nothing to induce a suspicion of disease in his lungs ; he had never had haemoptysis, catarrh, or angina. He used as a gargle one ounce of alum to a pound of water, for a fortnight, without amendment. Milk diet was then prescribed, with some advantage ; to this was added one bottle of Bonnes waters per day. This soon effected an improvement, and a complete cure at the end of two months.”

We see from the foregoing extract, that scepticism is not confined to the physicians of this country ; it is indeed the natural result of medical research and experience, for no man can appreciate the difficulties of a science so well as he who has encountered them. But while on the one hand, the physician should be *slow* to believe, on the other, he should not lapse into incredulity. To him

may be applied with propriety, the general maxim so elegantly expressed by the Latin poet :

Est modus in rebus; sunt certi denique fines,
Quos ultra citraque nequit consistere rectum.

I have myself lived long enough to have observed that valuable hints may be gathered from haunts of ignorance. Utility is not only the mother of justice and equity, but also and more especially of invention. I doubt not many "*old women*" in the interior of our country have cured diseases, by some simple infusion or decoction, that would have resisted all the science of the faculty. Had man continued to live in his original simplicity, the trade of the druggist would not be so profitable as it is at this time. I firmly believe that the Almighty has sent no disease to afflict his creatures, for the cure of which he has not appointed some remedy, subject, however, to that immutable law which has allotted to man a certain amount of vital power which he cannot exceed, but which he may be deprived of by some disturbing force from without, or by the misapplication of agents intended as remedial.

Chronic Bronchitis.—The expectoration sometimes precisely similar to that of the latter stage of the acute, but most commonly less glutinous, more opaque and nearly puriform. Occasionally it is of a dirty-grayish or greenish hue, from an admixture of the black pulmonary matter. It is usually ino-

dorous, but sometimes becomes more or less fetid, and assumes the smell as well as the other physical qualities of the different kinds of pus. This disease frequently follows acute bronchitis, and is liable to persist with remission for years.

During the remission, the appetite and strength return ; but the patient commonly loses a little flesh, and remains paler than usual. During repose there is no oppression on the chest, but exercise soon brings on dyspnoea. The complaint remits in the summer, and returns in the winter, frequently attended with fever. In some rare cases, hectic fever comes on with rapid emaciation, and the disease terminates fatally, with all the usual symptoms of phthisis pulmonalis. In fact, the most perfect similarity exists between the two diseases, as far as regards the expectoration, the emaciation, and all the other general symptoms.

Such are the characteristics of a disease which is becoming every year more prevalent in our variable climate, and which has assumed vast importance, not only on account of its frequency, but also on account of the evils which a continued impediment to respiration, may cause by producing congestion of the lungs and heart, and organic disease of the latter. This disease, when not the accompaniment of pulmonary phthisis, is usually manageable by proper treatment, and early removal to a mild climate. The waters of the Red Sulphur sel-

dom fail to relieve it, by removing the irritated condition of the membrane, and restoring a healthy secretion, and by imparting tone to the constitution. When this disease is attended with suffocating secretions, producing periodically great distress of respiration, much benefit will be derived, according to my own experience, in occasional emetics of ipecacuanha.

Having directed no supper to be taken, cause the patient to drink from half a pint to a pint of warm water; then give 15 to 20 grains of ipecac. The effect is at once to clear the tubes of accumulated secretion, to relieve the dyspnœa and calm the system by procuring for it a good night's rest. This treatment, in many cases, may be repeated every 48 hours with advantage. I have found emetics used in this manner also valuable in many cases of tubercular disease of the lungs. Nothing prostrates the bodily powers more rapidly than the constant attempt to expectorate, and indeed the hectic fever and sweats are greatly aggravated by this cause.

My advice to a person afflicted with bronchitis would be, to visit the Red Sulphur about the 15th of June, and use the water until the close of the Indian Summer, (say 1st to 15th of November,) and travelling thence southwards, on horseback if possible, spend the winter and spring in Cuba.

Most invalids from the Northern States return too soon, and proceed directly home. Now, this is

wrong; they should land at the southern extremity of the Union, and advance homeward according to the natural progress of the season. It is evident that a sudden transition from the climate of Cuba to that of Massachusetts is imprudent, and if made before the summer fairly sets in, may be hazardous; whereas, there would be little danger in arriving in New Orleans in April, and thence travelling northward so as to find somewhat the same temperature in one's progress.

Hypertrophy of the Heart.—From my remarks on indigestion in a former chapter, it will be readily seen what a vast influence is exerted over that organ by the stomach and lungs, both by the quality of the blood, as produced by a healthy or vitiated chyle, or by a perfect or imperfect oxygenation dependent on the function of respiration.

And, moreover, I think the reader can be at no loss to comprehend the *modus operandi* of the Red Sulphur in restoring the functions of this organ to a normal condition. The most conclusive evidence of its power in functional diseases of the heart may be adduced in several cases, in which the action of the arteries and heart has been reduced in frequency from 30 to 40 pulsations in a minute. Is there any other agent known to science that will do this? I humbly conceive there is not; and, therefore, I venture to promise patients affected with functional disease of the heart, the best results from a judicious use of this water.

The Kidneys and Bladder.—I shall touch upon the disease of these organs, from which relief may be expected at the Mineral Waters of Virginia. All sulphur waters claim to be beneficial in gravel, and I think they are so in a greater or less degree.

The form of disease in which they are most useful is lithic-acid gravel. “*Sand (civiale)* is understood to be a powdery deposit, which takes sometimes the form of a very fine powder, and sometimes, or more frequently, of grains caused by the agglomeration of little crystals, which are easily distinguished with the *lens*, or that are sometimes perceptible to the naked eye. This deposit is most frequently of a bright red color, though, in certain cases, it resembles that of brick-dust, or is gray, ash-colored, black or dusky.”

“*Gravel* (says Dr. Christison) may be defined the discharge of pulverulent or gritty matter with the urine, occasioning symptoms of irritation in the kidneys and urethra.”

The most frequent cause of gravel is indigestion, especially that species of it attended by acidity. When the fluid, overcharged with acid, is presented to the kidneys, it is secreted in excess; the lithate of ammonia is decomposed, and the acid precipitated. Another and very extensive cause of gravel is *hard water*. Of this fact I can speak experimentally. When riding through the mountainous region of the Alleghany, and using the water in most

districts of that region, I never have escaped with impunity, and I have uniformly suffered from using the strong limestone water of a village in that country. It is on this account that in this form of the disease, (lithic-acid gravel,) I should doubt whether the Sweet Springs may be used with safety, abounding as it does with calcareous matter. The White Sulphur, Blue Sulphur, and Salt Sulphur would be more likely to suit the invalid, more especially the last, as it is certainly more anti-acid than the others; but they have all to contend with the *hard, harsh* quality imparted by the sulphate and carbonate of lime; and therefore, if there should be an irritated condition of the kidneys, which is almost certain to be the case in a greater or less degree, the use of the Red Sulphur alternately with the spout bath at the Hot Springs, will be the most efficient treatment.

I have already intimated that a little bicarbonate of soda may be used with advantage, in connection with the sulphur waters. Candor requires me, however, to confess that relief from this complaint must necessarily be temporary, from any remedy but a strict regimen, and abstinence from whatever may have produced the predisposition. Irritation of the bladder, when produced only by functional disturbance, or excitable nervous temperament, will be relieved by the waters of the Red Sulphur.

Uterus.—In a work which is intended for the eye

of the general reader, it will only be necessary to touch lightly on the diseases of this organ. Those which may be considered under the remedial powers of mineral waters are *amenorrhœa*, or obstructed menstruation, *dysmenorrhœa*, or painful menstruation, and *menorrhagia*, or excessive menstruation.

Amenorrhœa is of two kinds ; one dependent on constitutional debility, and the other attended by the appearance of good health.

In the former, according to Drs. Ferguson and Simpson, the symptoms are, languid circulation, muscular debility, torpor, or inequalities of the nervous function and defective nutrition. When allowed to proceed uninterruptedly, amenorrhœa terminates in *chlorosis*. In this condition of the system, that mineral water will be the most useful which will arouse its torpid energies. Presupposing there is no organic lesion, such as tuberculous condition of the lungs, the bath at the Sweet Springs will be found the greatest remedy in this disease ; but if it be complicated with diseased lungs or bronchi, then the invalid's hope is the Red Sulphur. In the form accompanied by plethora, Dr. Goode's spout-bath, under *his advice*, is the appropriate remedy.

Dysmenorrhœa.—In this form of disease, I recommend Dr. Goode's spout-bath as the best remedy known to me. In all cases, this remedy must be used under advice. The Red Sulphur, as a *sedative*, may, with great advantage, be alternated with the Hot Springs.

Menorrhagia.—It is clear that no agent that excites the system is admissible in this disease. Females laboring under this form of uterine affection will, therefore, find the Red Sulphur alone appropriate, connected with a mild, unexciting regimen. I venture to say, that if the distinctions I have pointed out be observed, most of the cases of diseased uterine function attending the Virginia Springs will obtain relief, and that many a charming woman, whose hopes of fruitfulness have been blighted, will become a happy, thankful mother.

Some distance up the branch is a little Spring, discovered in 1840, and which is now called Hicks' Spring—a gentleman by the name of Hicks, from Mecklenburg, having ascribed his cure from chronic diarrhoea to its use. The general character of the water is the same as that of the great Spring; but it is weaker, and the temperature higher, by several degrees. It has this advantage, that it requires exercise in going and returning; but I would not recommend to invalids to rely *exclusively* upon it. The stream is exceedingly feeble.

The Red Sulphur is owned by the heirs of the late Andrew Beirne and James A. Dunlap. The place is under the superintendence of Mr. Alexander Dunlap. It is but justice to say that, so far as I have been informed from report as well as my own observation, the accommodations and attentions afforded here have given general satisfaction. There

were some murmurs last year about the want of music, and the gaiety that usually attends its presence, but Mr. D. gives assurances that the omission will not hereafter recur.

I would very respectfully call the attention of the proprietors to the fact, that they are permitting the grounds to become too much shaded. The valley is by nature deprived of some portion of sunshine, and it is therefore more necessary it should not be artificially obstructed. The trees in the lawn should be trimmed out, and the impending mountains again cleared.

A large building, for mercantile purposes, has been erected within a year, and thrown across the narrowest part of the neck of the valley, as if to stop its *windpipe*. In a place claiming to improve the organs of *respiration*, it seems rather an unscientific operation to deprive the lungs of a due share of *oxygen*; but it is only another instance of the bad taste that has marred so many of those naturally beautiful watering-places.

The turnpike road between the Red and Blue Sulphur is now completed. It is one of the best and most beautiful roads in the mountains, crossing the Greenbrier river at a very interesting spot. It is a drive of five or six hours, permitting the traveller to breakfast at one Spring and dine at the other. In the whole round of the Western Springs, there now remain nine miles to be turnpiked, and these are

the first nine miles from the *Salt* to the *Red*. The proprietors of both should unite and complete this link.

The Red Sulphur Bear.

The following composition appeared in the Southern Literary Messenger for November 1850. It is from the pen of the late Francis S. Key, who, in the summer of 1838, was a visiter at the Red Sulphur when the incident on which it is founded occurred. The version in the Messenger contains several errors, which it is but justice to correct, since the original manuscript is before me. It really was a most exciting and affecting scene, and one not to be forgotten by those who witnessed it.

A few days subsequent to the occurrence, the band had a concert, and this recitative and song, furnished by Mr. K., formed a part of the entertainment. It was recited and sung with admirable intonation and expression, by Benjamin Judah, who has frequently since repeated it with just applause.

There was a Bear—alas, that we must bear
The loss of such a bear! He was the pet
And playmate of the children, men and maids.
The ladies, too, wept briny tears for him,
Till all the Springs were salt—For much he loved
To play his tricks before them, and to take
From their fair hands the dainties they would bring,

And they would stroke his sable fur, and feel
His velvet paws, and then he lick'd his paws.
And paws so touched, he could have licked and lived
Long on such licking.—But, alas! he died.
Now a bare bear-skin and some bare bear-bones
Are all that's left of Bruin,—save at night
When blaze the lights upon the mountain side,
And music o'er the valley floats, and calls
The bright-eyed maidens to the sprightly dance—
Upon the glossy curls that shade the cheek
And brow of beauty, Bruin's fat is there,
Soft'ning and polishing the silken locks.
Bruin! thy chops were savory—so said
The chaps that did thereon their chops regale.
The ladies ate thee not—they would not feed
Upon a tam'd and educated bear.
Nor me, could steak or cutlet, fried or broiled,
Stew'd paw, or garnished head, tempt to that feast.
For I had seen thy death—It was a death
Unseemly for a bear—unworthy of thy race.
But had'st thou died among thy native wilds,
When hound and horse and horn had from thy lair
Arous'd thee, and thou nobly stood'st at bay,
And many a fierce soe howl'd his last
Within thy perilous embrace, and gallant hunters
Clos'd round thee slowly, marking thy dread glance,
Admiring thy stern courage, giving death
In honorable wounds,—then had'st thou died
A death of glory, and had I been one
Of that proud ring, I could have join'd the feast
Won by fair chase and combat—eat thy steaks,
And pick'd thy bones unscrupulous.—Alas!
Far other was thy death—a felon's death
The cowards gave thee—threw around thy neck
A noose, and thrice essay'd to drag thee back
As a vile prisoner.

Once, when escap'd, I mark'd
His noble bearing, when his fierce pursuers
Fled from his glance. He look'd upon the mountain,
And then I hop'd to see him climb its top,
And turn, and growl defiance. One there was,
Of courage dauntless, in the crowd of foes,
*Cæsar** by name—Cæsar by nature too.
He calls to Bruin as he slow retires,
In words of scorn and menace—Soon he turns—
They meet—they close—more doubtful conflict never
Did battle-field display. Well were they match'd;
Both brave, both black, and equal both in height;
For Bruin boldly raised himself erect
Upon his hinder limbs, and brandish'd high,
And huge as giant's arms, his fierce fore-paws.
Soon Cæsar seiz'd, with dext'rous jerk, the rope
Pendant from Bruin's neck—as soon the paws
Of Bruin o'er the shoulders broad, and back
Of Cæsar, closed in deadly grip; that hug
There was no standing, and so Cæsar tripp'd him.
For Bruin, though he stood on two feet well,
Had never practis'd one in his gymnastics.
He falls!—Cæsar above him—still the strife
Is desperate. And, lo! now Bruin turns
Upon him with a growl and fiercer grasp.
Now, Cæsar! ply thy rope—thy life depends
Upon the hold it takes—thy foe's strong throat
Must be compress'd that not a breath may pass.
Thy ribs now almost touch, the heart scarce beats
Between them—quivers, and must soon be still.
One other little breath, one other strain
Of those strong arms—and Cæsar is no more.
That other breath comes not—one desperate pull,
And the rope clos'd the passage. See, he gasps—
One last convulsive struggle ends the strife.
Those mighty paws, now weak as baby's hands,

* A cook at the Red Sulphur.

Cæsar has thrown aside—His heart has room
Again to beat—He rises conqueror.
Such was the end of Bruin—yet before
That fierce encounter, other means were tried
To lure him back to bondage.—It was said,
“Music had charms to soothe the savage beast,”
And that he often seem’d, when the full tones
Of richest harmony flow’d from the lips
Of his kind mistress, to drink in the sounds
With rapture, like all other listeners.
Music was therefore tried.—The band was call’d,
And captivating were the strains they pour’d
In Bruin’s ears—but it was vain, for he
Would not be captivated. Then they call’d
Two of that band, with voices sweet as notes
Of nightingale, of power to charm the ear
Of every listener, and calm the heart
With all the magic influence of song.
They came, and breath’d in sweetest melody,
A plaintive ditty to this angry bear,
Beseeching him to lay aside his wrath,
Resume his chain and live among his friends.
He heard and heeded not—and when you hear
The song that he received so sullenly,
You’ll wonder that the Bear was such a brute,
And think he justly died.—The song ran thus—

O Bruin! O Bruin! come back to thy chain,
Nor seek thy far home o’er the mountain again;
For the mother that bore thee will know thee no more,
And thy brother cubs drive thee away from the door.

Why would’st thou return where you nightly must howl
In thy hunger, as through the dark forest you prowl;
To fight the wild bees for their hoard of sweet food,
Or spoil thy teeth cracking the nuts of the wood?

What a life thou hast led since thou haply wast caught,
And here to this sweet little valley wast brought!

Its blest waters thy drink, its rich dainties thy fare,
What more could be asked for man, woman or bear?

It is true you are tied; but, Bruin, you know
It is all for your good that you are kept so.
How many are here, who would gladly agree
To be tied to a tree, could they fatten like thee?

We have tam'd you and fed you, and now you are here,
Your polite education engages our care—
Your manners are mended, some clever things taught,
But greater attainments are still to be sought.

*Carusi** is here, and shall teach you to dance,
How to enter the ball-room, and bow and advance
To the ladies, who sit in a beautiful row,
Each waiting to see if the Bear 'll be her beau.

Then the waltzing—O Bruin! think only of that—
That a lady's bare arms, with thy bear arms enwrapt!
Thy bear-skin her bare skin shall touch—O! what Bear
Can bear any pleasure with that to compare?

O! think of thy paws when thy dancing is done,
When the summer is o'er, and the ladies are gone;
Through the long winter nights, when the snow-flakes fall thick,
Thy lady-press'd paws will be luscious to lick.

* A distinguished dancing-master, from Washington city—a visiter at the Red Sulphur.

CHAPTER XI.

SALT SULPHUR SPRINGS.

The Salt Sulphur Springs are situated on Indian creek in Monroe county, 17 miles from the Red Sulphur, 33 from the Blue Sulphur, 25 from the White Sulphur, and 22 from the Sweet Springs.

This interesting valley is of singular formation. Two hills on the north and northeast approach each other, leaving a narrow gorge between them, through which winds, in a gentle curve, Indian creek, until it reaches the base of another still higher and steeper hill on the northwest, by which it is turned in a southwestwardly direction. Some short distance below this neck the vale begins to spread out like the shell of a terrapin, and forms one of the prettiest coves imaginable, commanding a view of the graceful Peters' mountain rising into the southeastern horizon, at the distance of about eight miles, and Swope's mountain in the northwest, at the distance of about two miles. The hills immediately bounding the valley are what the natives call *knobs*—an inelegant, but very appropriate designation.

The space between these hills is at its northern extreme covered with numerous buildings, and the grounds extending along the stream are neatly and tastily improved, and are shaded by a great variety of the most beautiful indigenous trees and vines. The good sense of the proprietors—perceptible in this as in all their arrangements—has caused them to cut down the forests from the impending hills, and keep them in a state of cultivation ; and this it is that has given the location character for being drier than those of the neighboring Springs.

God gave his bright sun to cheer, and gladden, and comfort, and invigorate, and where it does not penetrate, there can neither be health, beauty nor comfort. It is well enough to talk of the shade ; it is a subject of eulogy to the poets ; but man, healthy, vigorous, intellectual man, requires those warming rays that seem like emanations from the God of Nature himself. There is no greater mistake than to overshade those watering-places. The sun's heat is oppressive only for a few hours every day, and a dozen fine trees, with the porticoes, afford shelter enough from its rays for this short period, whilst at eve, and early morning, it is essential for attracting the superfluous moisture from the investing atmosphere.

As you enter the beautiful lawn the hotel presents itself with gable in front. Here is the bar-room, where gentlemen are received. This build-

ing is of wood, is two stories high, and runs back some 200 feet, the dining-room on the first floor occupying the whole length. There is a wing containing a private parlor and family apartments. On the second floor is a large ball-room and many chambers, that are very comfortable and always in demand. There is a double piazza the whole length of the building. At right angles with it are two comfortable cabins, and a very neat and comfortable stone house, two stories, with double piazza, and containing several apartments.

Along the slope of the hill there has been erected by the enterprising proprietors a stone edifice, three stories high above the basement, of more massive proportions than even the great building at the Sweet Springs. I think it is 210 feet long by 32 feet wide on the inside. It has several passages running across the house, and from these ascend the stairways. There are, I think, 80 chambers, with a fire-place in each. On the first floor four of those chambers are united in one very spacious parlor, in which the inmates pay and receive visits, and congregate for social intercourse. There are three covered piazzas or galleries running the whole length of the building. This is the locality most in demand, and it is, indeed, exceedingly comfortable. Besides these improvements there are three long ranges of cabins, connected by piazzas, affording many comfortable rooms. The whole of the build-

ings here ought to accommodate 350 visiter, and they would do so in the hands of others ; but the kind, indulgent disposition of Messrs. Erskine & Caruthers *spoils* their guests, and they seem to go here for *elbow room*.

This is certainly one of the most delightful summer retreats that can be met with anywhere. I spent there the greater part of last season, and I can testify, from personal observation and experience, to the uniform kindness of the hosts, the excellent, indeed sumptuous fare, the neatness and comfort of the bed-chambers, and the general good order pervading the whole establishment. If the visiter desires to have his appetite sharpened for fine, rich, cool milk and delicious butter, let him take a peep at the dairy and see the nice vessels with their contents standing in the clear cool limestone spring. Here he will get in its perfection a fine, juicy slice of sweet, tender mountain mutton, venison or beef, and poultry, eggs, and everything that abundant region affords. For breakfast he has fine bread, loaf and indian, and all sorts of cakes, hominy, &c. But I need not farther specify the good things to be met with here—the place has been famous for good living for the last thirty years.

The South Carolinians, who understand comfort as well as perhaps any other people on this continent, found out this place long ago, and they come to it every season in considerable numbers.

There is no place in the mountains, where the society is more select, more charming, more intellectual, than it is at the Salt Sulphur. Gaiety and happiness seem to reside here, as it very rarely happens that it is rendered sombre by the presence of persons in very low health. There is a very neat and substantial church here, built of stone several years ago, by contribution of visitors. It is free to all denominations of Christians, and is frequently open during the summer season. This is a comfort which is usually and justly appreciated. There is a store here also, and several shops for mechanical purposes, which often prove a source of convenience to visitors.

The Salt Sulphur is situated on the verge of one of the finest countries in Virginia. It would be difficult to find anywhere a tract of country more fertile and valuable than that enclosed by the parallel ridges of Swopes' and Peters' mountains, and by lines drawn from one to the other, touching the Salt Sulphur at one extreme, and the Gap mills and Second creek at the other, being about 100 square miles. Without mentioning the other fine estates included in this region, those of the Beirnes and Capertons are conspicuous. Magnificent herds of fat cattle may be seen on their fields every summer, wallowing in luxuriant grass—an evidence of abundance that is agreeable to every eye. Two miles and a half from the Springs is the county town—

Union—a very pretty village, containing an academy, two or three churches, a courthouse, two taverns, and several well-supplied stores.

The Mineral Springs are, first, the Salt Sulphur *proper*, about 150 yards down the lawn from the hotel across the creek, over which you pass by a wooden bridge. This Spring is enclosed in a square box of marble slabs, about $2\frac{1}{2}$ feet in diameter, and covered by a plain, circular temple. It is not a very bold stream, but affords, nevertheless, an abundance of water for all purposes required. It is a strong sulphur water, highly charged with saline ingredients, as may be seen by the analysis. About 100 yards below was discovered the *New*, or Iodine Spring, a few years ago, and immediately improved. It is enclosed like the former, and covered by a suitable building. It appears from the analysis of Mr. Rogers, that in some of its ingredients it is almost identical with the old spring, but contains the important additional ingredient of Iodine.

Both of these waters, with that of the Sweet Sulphur, a short distance up the creek, have been sent on to Baltimore for more minute analysis, and if the results reach me before this work goes to press, they will be given in detail. Meantime, I refer the reader to the classification of Dr. Mütter, a distinguished physician of Philadelphia, of the diseases in which he has known, from personal observation, those waters to be applicable. His high standing

entitles his opinions to a degree of authority no individual so humble as myself can possess. I therefore yield to him the space I might otherwise occupy on this part of the subject, and I do it with the greater pleasure because I agree with him in most of the virtues he ascribes to these waters.

I must confess that, until last summer, I was sceptical as to the virtues ascribed to the *Iodine Spring*, at this place; but I saw some well-marked cases of tuberculous and scrofulous diathesis in which its use seemed to be attended with advantage. The manner in which the presence of Iodine was enunciated was the difficulty with me—it being given as a trace. But whatever misunderstanding there may have been on this head, experience proves the water to produce medicinal effects similar to those produced by *hydriodate of potassa*.

To persons, therefore, who are of the scrofulous predisposition, as well as to patients affected by incipient goitre, or the various diseases of the skin, this water may be recommended with confidence.

There are conveniences for bathing here that are quite comfortable. Baths of any temperature may be obtained at all hours.

CHAPTER XII.

DISEASES TO WHICH THE SALT SULPHUR IS
APPLICABLE.*

The Salt Sulphur, like almost all the sulphurous waters, being a stimulant, should consequently not be employed in acute or highly inflammatory affections, nor in those in which there exists much active determination of blood to the head, or at least not until this determination has been guarded against by previous *diet*, *purgation*, and if necessary, *blood-letting*. But in all *chronic* affections of the *brain*, *stomach*, *bowels*, *liver*, *spleen*, *kidneys* and *bladder*, it is one of the most valuable of our remedial agents. In diseases of the joints (gout and rheumatism) and skin, in *mercurial sequelæ*, in hæmorrhoidal affections and in chronic diseases of the womb, it is also a remedy of immense importance.

1. *Of Chronic Diseases of the Brain.*—In no class of diseases, probably, is there required more caution in the exhibition of a mineral water, and especially of one which, under ordinary circumstances,

* Dr. Thomas D. Mütter.

excites the system at large. Many persons on this account have prohibited its use; but experience, the only sure guide, has shewn that many a case of chronic headache, incipient mania and local palsy, dependent on congestion or chronic inflammation of the brain, will yield to the steady use of a cathartic mineral water, when almost every other agent has failed. For such cases the Salt Sulphur seems peculiarly adapted; but it must be used with caution, and assisted, if necessary, by local depletion, counter-irritation and diet.

2. *Neuralgia*.—It is well known to the profession, that neuralgic affections are often dependent upon a deranged condition of the chylopoetic viscera. The habitually costive, or those who have suffered from repeated attacks of miasmatic diseases, and the dyspeptic, are generally most liable to attacks of neuralgia. In such cases, I have known the Salt Sulphur prove highly beneficial.

3. *Nervous Diseases*.—The various affections termed nervous, such as hypochondria, hysteria, catalepsy, chorea, &c., are also dependent upon disorder of the digestive apparatus, and resist all our remedies for months and years. In such cases, a trip to a Mineral Spring is generally recommended, not so much for the waters, probably, as for the change of air, scene, mode of life, &c., which it entails. Making all due allowance for the beneficial action of the last named agents, I am confi-

dent that the steady cathartic action of the water is of infinite benefit. Two cases of chorea, and one of hysteria, I saw completely relieved in the course of six weeks, by the use of the Salt Sulphur water.

4. *Chronic Diseases of the Chest.*—Diseases of the thoracic viscera are unfortunately too common in our country, and hence we find crowds of their unfortunate victims at nearly every watering-place, seeking, and too often but vainly, some relief from their distressing condition. In some cases, those, for example, in which the irritation is dependent upon the retrocession of some habitual discharge, and those, too, in which the skin is *dry* and *cool*, and the indication is to produce a revulsion to the surface, by directing fluids from the centre to the circumference, which will also facilitate expectoration, the cautious administration of the Salt Sulphur water will be useful.

In those cases, also, in which the cough is sympathetic, or dependent upon some lesion of the chylopoetic viscera, it may be employed; but in every instance where it can be traced to an organic affection of the heart or large blood-vessels, and if there be fever, emaciation, tubercles, with cavities in the lungs, hæmoptysis, or diarrhœa, the death of the patient will be hastened by the employment of a stimulant so active as the Salt Sulphur.

For pulmonary cases, the Salt Sulphur offers the advantage of an agreeable temperature and a

dryness of atmosphere not possessed by the other Springs in the mountains of Virginia. During the season, which continues from the 1st of June to the middle of September, the thermometer ranges from 70° to 85° Fahrenheit, and there is little or no fog in the morning.

5. *Chronic Diseases of the Abdominal Viscera.*—In making an estimate of the cases of disease one meets with at a watering-place, it will not, I think, be going too far to say, that two-thirds at least are referable to some affection of the abdominal viscera. Hepatitis, jaundice, splenitis, gastritis, gastralgia, pyrosis, dyspepsia, enteritis, diarrhœa, &c., are encountered at every turn.

In *Hepatic Affections*, or those commonly called *bilious*, the Salt Sulphur water is, without doubt, one of the most powerful and efficient remedies we possess. When taken in a proper manner, its sanative influence is speedily manifested by a change in the biliary secretion. Constipation, the usual attendant upon such cases, is relieved, the sallowness of the skin disappears, and in the course of a few weeks a complete and radical cure is often accomplished.

Chronic Splenitis.—One of the most common, and at the same time one of the most obstinate of the sequelæ of the fevers of the South, I have known frequently relieved by the use of this water, as well as by that of the White Sulphur.

Chronic Gastric Irritation, it is well known, is of-

ten relieved by the administration of an agent calculated to set up a new action in the mucous coat, and those cases of dyspepsia which depend upon such a condition of the stomach are often relieved by the use of a sulphur water. A number of such are annually met with at the Salt Sulphur, many of which leave the Spring perfectly cured.

Gastralgia, or *Nervous Dyspepsia*, is also occasionally met with, and may depend upon a variety of causes. When it is purely a functional disease, unaccompanied by organic lesion, a sulphur water, along with sulphur baths, will sometimes produce a very happy effect.

Pyrosis, or *Water-brash*, is another disease to which the Salt Sulphur proves pre-eminently useful. I have known cases in which a pint or more of secretion so acid as to set the teeth on edge, was daily thrown up, radically cured by the use of this water in the course of six or eight weeks. (Mr. F. of Princeton is an example of this.)

When dyspepsia is known to be dependent upon scirrhous or cancer of the stomach, I would strenuously advise the patient to abstain from the use of the Salt Sulphur, and indeed from that of any mineral water. Mrs. C. of North Carolina was, I am convinced, destroyed by it.

Chronic Irritation of the Bowels, giving rise to chronic diarrhoea or dysentery, upon the principle of a new action being set up, are frequently cured

by the use of the Salt Sulphur. I wish this statement to be borne in mind, for it is usual to decry the use of the Salt Sulphur water in such cases; but the experience of those who have paid attention to the subject will bear me out in the assertion. Mr. T. of Philadelphia, who for three years labored under chronic diarrhoea, and who was supposed to have ulceration of the mucous membrane of the bowels, was radically cured by a few weeks' use of the water.

Constipation.—Habitual costiveness is another affection for which the Salt Sulphur is an excellent remedy.

Hæmorrhoids.—The use of laxatives in piles is a treatment so long in use, that nothing need be said in its favor, but that sulphur water operates much more beneficially than any other agent, inasmuch as in nearly every case of chronic piles we find the liver more or less affected. This fact, first observed by Armstrong, is so universally admitted, that I shall not stop to say anything towards its further substantiation.

6. *Chronic Diseases of the Urinary Organs.*—From the fact that nearly all mineral waters, either from the quantity usually taken, or from some peculiarity of their ingredients, prove diuretic, they have always been favorable remedies in diseases of the urinary organs. Those which contain an excess of

alkaline ingredients have, without doubt, proved remarkably serviceable in cases of *acid* calculous diathesis; but it must be confessed that, as a general rule, and always where the stone is large, they prove but a doubtful remedy. In the incipient stages of a calculous disease, however, and those especially in which the formation of stone is dependent upon some disease of the digestive apparatus, the Salt Sulphur waters are often useful. When this water fails to accomplish the desired object, I have seen that of the *Sweet Springs* productive of much good.

Although this water may be considered as a somewhat doubtful remedy in calculous disease of any duration, it must be allowed to possess astonishing sanative properties in chronic irritation of the *mucous membrane of the kidneys, bladder, prostate gland and urethra*. Many cases of chronic nephritis, vesical catarrh, prostatic irritation and gleet, are annually cured by its employment.

7. *Chronic Diseases of the Genitals.*—Like all sulphur waters, those of the Salt Sulphur are often very useful in obstinate cases of general or local debility, the result of previous excessive indulgence. They are also remarkably beneficial in atonic leucorrhœa, amenorrhœa and dysmenorrhœa; but when either of these complaints is dependent upon local or general plethora, the use of the water must be

preceded by depletion, either local or general, according to circumstances.

8. *Chronic Rheumatism and Gout.*—The diseases most frequently met with after those of the digestive organs, at our different watering-places, are rheumatism and gout. In all such the alterative influence of a sulphur water is invariably, I believe, more or less useful; but to receive full benefit from its use, the warm or hot mineral bath should be resorted to, and the diet, clothing and exercise properly regulated. With many others, I cheerfully acknowledge the immense benefit derived from the use of the Salt Sulphur.

9. *Mercurial Rheumatism, Periostitis and Inflammation of the Bones* are also very much relieved (in most cases) by the use of the Salt Sulphur. Along with the water it will be well to use the hot baths.

10. *Chronic Diseases of the Skin.*—When judiciously administered, no remedy is productive of more permanent benefit in all cutaneous affections, than the sulphur waters, but unfortunately they are but too often abused. They are only suitable when the eruptions are of long duration, and unaccompanied by inflammation. Used in the acute stages, they aggravate the symptoms. It is always proper, moreover, to employ the warm or hot baths during the use of the water. The Salt Sulphur is often eminently successful in relieving cases of this kind.

I have thus briefly sketched the principal affections to which the Salt Sulphur is applicable; and to shew that my assertions are borne out by facts, I insert the certificates of several persons, who, with myself, were very much benefitted by its use.

SALT SULPHUR SPRINGS,
July 29th, 1835.

To Messrs. Erskine and Caruthers,
GENTLEMEN,

The undersigned, visitors at the Salt Sulphur Springs, prompted by a sense of grateful respect for your kind and unwearied attentions to ourselves and families, beg leave to convey to you our assurance of entire satisfaction with the arrangements of your establishment. Such have been the cordial hospitalities and ample and varied accommodations of your house, that we shall ever look back to our temporary residence with you with pleasure and delight.

Experience, which is the best analysis your Springs can have, justifies us in recommending it as an invaluable anti-dyspeptic water, relieving the liver, bowels and vascular system, and acting very kindly upon the secretions generally.

If order, abundant and well-prepared fare, excellent bedding, quiet and obliging domestics, impartial and gentlemanly efforts to promote health and

comfort, have any influence upon public favor, the proprietors of the Salt Sulphur will certainly secure it.

With sentiments of respectful regard,
Your obedient servants,

Rev. Benjamin M. Palmer, Charleston, S. C.; James Chestnut, Camden, S. C.; Jos. Otis, New York; Rev. John Johns, D. D., Baltimore, Md.; Alfred Leyburn, Lexington, Va.; Rev. Henry V. D. Johns, Fredericktown, Md.; H. V. Levis, Philadelphia; Wm. H. Hubbard, Richmond, Va.; Thomas Wilson, Baltimore; Thos. Easley, Halifax county, Va.; A. Sebrall, Kanawha, Va.; Wm. Ellicott, Ellicott's Mills, Md.; Willis Jones, M. D., Milton, N. C.; Henry P. Norris, Baltimore; R. Jones, U. S. A., Washington; W. B. Meacham, Miss.; Peter H. Dillard, Rockingham county, N. C.; James V. Toby, New Orleans; George L. Twiggs, Ga.; Richard Tuban, Ga.; S. T. Gaillard, S. C.; P. A. Clay, Bedford, Va.; Jacob V. Davies, Baltimore; Samuel R. Smith, Baltimore; Robert M. R. Smith, Baltimore; J. B. Grimball, S. C.; Oliver Norris, Baltimore; A. K. Brown, Petersburg; William A. Caruthers, M. D., New York; John Clark, M. D., New York; Samuel St. John, Jun., Mobile; William Wilson, Lexington, Va.; Charles S. Richards, New York; Olio Dyer, Mobile; William Bones, Charleston, S. C.; John P. Staples, Patrick county, Va.; George Walton, Lynchburg, Va.; John T.

E. Lewis, Brunswick, Va.; James Greenlee, Rockbridge county, Va.; Benjamin B. Duke, Louisa county, Va.; M. H. Dosson, La.; William Brown, N. C.; John Harleston, S. C.; S. Garland, Lynchburg, Va.; Francis D. Quash, S. C.; George C. Friend, Charlotte county, Va.; Edward Wilkins, N. C.; Orlando S. Rees, S. C.; J. B. Billysley, S. C.; Thomas Shivers, Philadelphia; F. Pinckney Lowndes, Charlotte, S. C.; Thomas W. White, Halifax county, Va.; Burwell Bassett, Williamsburg; C. P. Dorman, Lexington, Va.; Charles H. Robertson, Charlotte county, Va.; Henry Robertson, Charlotte county, Va.; Samuel N. Stevens, Charleston, S. C.

SALT SULPHUR SPRINGS,

August 13th, 1838.

Messrs. Erskine and Caruthers.

GENTLEMEN,

Having been greatly benefitted by drinking the waters of your valuable Spring, I deem it a duty to my fellow-beings to leave this statement of my case in your hands. For six months previous to my coming here, I had been suffering with a most obstinate constipation of the bowels, which I had tried in vain to remove by medicine, diet and exercise; and during that time I could not obtain a stool without the aid of an injec-

tion, and great pain attending it. After being here ten days, the Salt Sulphur water began to act freely on my bowels, and now, at the expiration of a month, I am glad to inform you that the constipation is entirely removed, and my strength restored, and I am going home in cheerful spirits to my friends.

Yours truly,

GEORGE A. BUTT,

New York.

SALT SULPHUR SPRINGS,

August 10th, 1836.

Mrs. —— left her house in a state of great debility, scarcely able to walk, and was but little recruited by the journey. She reached the Salt Sulphur on the 20th of July, having stopped a week at the White Sulphur on the way, but without using the water. After remaining three days at the Salt Sulphur, and partaking of the waters there, she proceeded to the Red Sulphur, and staid there six days, returning on the 29th July to the Salt, having, while at the Red, used two or three tumblers of the water per diem; remained at the Salt Sulphur until the 9th of August.

When Mrs. —— arrived first at the Salt Sulphur she weighed 91 pounds, and was unable to walk any distance, or use any degree of exercise, without great suffering. In thirteen days after her arri-

val at the Salt Sulphur she was again weighed in the same scales, and had increased to $95\frac{1}{2}$ pounds, making a gain of $4\frac{1}{2}$ pounds in weight, while the circumference of her waist had been reduced nearly five inches. In the interim, her countenance and eyes had undergone an essential change for the better, her spirits and strength restored, so as to take any ordinary exercise of riding or walking without inconvenience. The quantity of water which she ordinarily took was from three to four glasses per diem, and she was careful in her diet, avoiding all warm bread, and principally using bran bread, hominy, mutton, &c., &c.

STAUNTON, March 1822.

Some years since, I was afflicted with an obstinate and dangerous disease, from which I was unable to obtain relief until I visited the Salt Sulphur Spring, near Union in the county of Monroe. The use of that water restored me to perfect health, which makes it my duty to state, at the request of the proprietors, the high opinion I have formed of its medicinal efficacy.

I consider the Salt Sulphur water eminently useful in all cases that require cathartic remedies, particularly such diseases of the liver and stomach as proceed from biliary obstructions. The operation upon the bowels is active, but not violent, cleansing effectually the alimentary canal, and promoting di-

gestion in a remarkable degree. The cathartic tendency of the water is so mild and certain, that the stomach and bowels are never oppressed or irritated; and whilst the healthy functions of the system are enabled to take their course, the suspended causes of disease are gradually worn away.

BRISCOE G. BALDWIN.

In the year 1812, I visited the Sweet and Sulphur Springs. I was then laboring under a nervous debility and extreme costiveness. I derived much benefit from the use of all those waters, but found none so strong and active as the Salt Sulphur. I concur in the opinion with many, that this is a valuable water, and should be more sought after.

Certified this 6th day of May 1823.

S. B. CHAPMAN.

SALT SULPHUR SPRINGS,
August 31, 1836.

Messrs. Erskine and Caruthers.

GENTLEMEN,

Intending to leave your excellent and perfectly arranged establishment to-morrow, on my return home, I cannot, however, do so without expressing my thanks to you for your polite attention to myself, (and I observed the same attention to others,) during my stay at the Salt Sulphur; and I have much pleasure in saying, that the use of the

Salt Sulphur Spring water has been eminently beneficial to me; for, prior to my coming here, I had been suffering for eighteen months from a total derangement of stomach from a long residence in a warm climate, (Bermuda,) say, bad bile, great acidity of stomach, and an overflow of mucus to the lungs; in short, I had the dyspepsia, with all its disagreeables, accompanied with debility of body.

Having tried the White Sulphur for ten days, without benefit, I came here, and in a week I found relief from all my complaints; but my medical adviser, who practised at the White, recommended me to try the Red Sulphur, notwithstanding my having written to him of my improved state—my pulse, for one thing, being reduced from 80 to 73 beats. I went to the Red, and stayed there eight days; my pulse rose on the third day to 82, the fifth day to 89, the sixth day to 96 and 100. I was obliged to be leeched, which reduced my pulse to 84. I had there headachs and dryness of tongue; so, on the ninth day in the morning, I returned to the Salt, where, on the fourth day, my pulse was again at 73, on the sixth day at 71, and has continued from that day to this, varying only from 71 to 72, night and morning.

I always counted my pulse in bed, when quiet, before drinking the water; for after drinking the Spring water, my pulse latterly came down to 68 beats. I was attentive to my diet, taking only stale bread or

dry toast, with scarcely any butter, two cups of tea with milk (no cream) for breakfast; my dinner was mutton, (*no gravy,*) with rice and stale bread, no vegetable—sometimes I took roast fowl, but no pudding or pies; at tea-time, I took one cup of tea and stale bread—no butter, I found grease so bad for me. The quantity of water taken by me was two half-pint tumblers at half past 5 o'clock in the morning in bed; one tumbler at 12 o'clock; sometimes one at 5 o'clock; and when in bed at night I took one more tumbler of the water, but if I wished to perspire a little more freely, I took two tumblers of it. I found the water determine gently to the bowels, rather than to the kidneys. What I took produced a full movement of the bowels. Before breakfast I walked a quarter of an hour; between breakfast and dinner I walked about five miles, often going to Union; between dinner and bed-time I think I walked about two miles more. I used to calculate about seven miles a day. For one hour after dinner I remained quiet in my room. I ate fruit once, and it gave me such a lesson I never tried it again, I am thus particular, for it may be of benefit to some one else next year, and you are quite welcome to shew this letter if you wish it.

Wishing you your health, not forgetting Mrs. Erskine,

I remain, gentlemen,

Your obedient servant,

W. H. BURNABY, *Baronet.*

SALT SULPHUR SPRINGS,
Sept. 22, 1839.

Messrs. Erskine and Caruthers.

I have been affected for five or six years with an obstinate disease of the liver and dyspepsia, and have visited nearly all the Springs in the mountains, without having experienced any material benefit, until I came to this place.

I have applied to some of the best physicians, without being relieved, but am happy to state that the Salt Sulphur water has had a most beneficial effect in removing many of the inconveniences attending my disease, insomuch that I am induced to carry a portion of it home with me.

Yours, most respectfully,

JOSEPH E. GARRATT.

P. S.—I am a resident of Knoxville, Frederick county, Maryland. J. E. G.

A true copy of the original.

ERSKINE & CARUTHERS.

ANALYSIS OF THE SALT SULPHUR SPRINGS.

BY PROF. WM. B. ROGERS.

Temperature variable from 49° to 56° . Solid matter procured by evaporation from 100 cubic inches, weighed after being dried at 212° , 81.41 grains.

Quantity of each solid ingredient in 100 cubic inches, estimated as perfectly free from water:

1. Sulphate of lime,	-	36.755	grains.
2. Sulphate of magnesia,	-	7.833	"
3. Sulphate of soda,	-	9.682	"
4. Carbonate of lime,	-	4.445	"
5. Carbonate of magnesia,	-	1.434	"
6. Chloride of magnesium,	-	0.116	"
7. Chloride of sodium,	-	0.683	"
8. Chloride of calcium,	-	0.025	"
9. Peroxide of iron, derived from proto-sulphate,	-	0.042	"
10. An azotised organic matter blended with sulphur, about		4	"
11. Earthy phosphates,		a trace.	
12. Iodine.			

Volume of each of the gases contained in a free state in 100 cubic inches:

Sulphuretted hydrogen, 1.10 to 1.50 cubic inches.					
Nitrogen,	-	-	2.05	"	"
Oxygen,	-	-	0.27	"	"
Carbonic acid,	-	-	5.75	"	"

"I enclose you a list of the ingredients in the Salt Sulphur water, which applies to the New as well as the Old Spring, the former having rather a smaller amount of saline matter in general, though in some ingredients surpassing the other. It has been very minutely analyzed, and is the first of all

the waters in which I was able to detect traces of iodine, which it contains in a larger amount than the Old Spring, and indeed most of the other waters in which I have been so fortunate as to discover this material."

In connection with the agency of iodine in the New Spring, I give insertion to the following interesting certificate:

UNION, MONROE COUNTY, V.A.

15th December 1845.

During the summer of 1845 I was induced to try the Iodine Spring, at the Salt Sulphur Springs, in Monroe, for an obstinate and (as I then supposed) incurable eruption on the skin of one of my children. The disease first appeared at the age of three weeks, in the shape of small red spots upon the cheeks, succeeded very soon by little watery pimples, which rose and broke continually, but without healing. In a short time the affected parts increased in size as well as quantity, until they extended from the face to the head and neck, and thence over the entire body—presenting one uniform and consolidated appearance of disease over the whole surface. The neck, head and face discharged matter from the scabs, and the legs from the knee down.

For fourteen months I kept the child constantly under medical treatment, but without any perma-

nent benefit, or any prospect of recovery, until, at the instance of Dr. M——, (who was at that time residing at the Salt,) I was induced to make a trial of its waters. He represented the disease as a constitutional affection of the blood, which could not be relieved, and which ought not to be arrested very suddenly, but assured me, very confidently, that it would yield to nothing with so much certainty and success as to the external application of the Iodine water at the Salt. The child was bathed twice a day in the water, made gently tepid, of which it drank pretty copiously during the ceremony. About the fourth day there was an evident change for the better, and the child from that time continued to improve daily, until, at the expiration of six weeks, the sores had healed, the scabs had disappeared, the pimples and splotches had subsided, and the skin, for the first time for more than fourteen months, assumed a natural and healthy appearance.

I have no doubt, by remaining a few weeks longer, every vestige of the eruption would have been removed. But I consider the disease at this time as effectually conquered, and as having changed its type completely ; indeed, the only indications ever visible, are an occasional roughness of the skin. As we used no medicine, except occasionally some mild cathartic, I feel no hesitation in ascribing all the results that I have stated to the effects of the Iodine water.

WM. G. CAPERTON.

CHAPTER XIII.

SWEET SPRINGS.

The Sweet Springs are situated on the head waters of Dunlap's creek, on the eastern border of Monroe county, 17 miles from the White Sulphur, and 22 from the Salt Sulphur, in a delightful valley, the air of which is pure and dry.

This vale, about five miles in length, and of an average of about half a mile in width, bounded on the north by the Alleghany, and on the south by the Sweet Springs mountain, may, without any disparagement of other beautiful valleys, be denominated the *Tempe* of Virginia. I first visited it in 1823, when elasticity of limbs, buoyancy of spirits, ardor of temperament were yet mine, and a gifted and accomplished woman roamed with me over those lovely hills, and from their summits admired its scenery from many points of view.

Ye halcyon days! how shall the aged man paint those scenes, associated with the dearest reminiscences of life? It feels to me like wandering solitary and pensive through the old church-yard at

Williamsburg, and by rubbing off the dust and moss of a century, trying to decipher the faint inscriptions on the tombstones. Vain, vain world ! It is only twenty-seven years ago since I was first at this rural watering-place, amidst the *elite* of Virginia, the Carolinas, and Maryland ; when beauty, wit, elegance and grace characterized the fair visitors, and honor, refinement, urbanity and disinterestedness distinguished the male portion of the assemblage.

The Sweet Springs, the White Sulphur and the Warm Springs were then the only places of any note in that region, and the White and Sweet were on a par as to extent of accommodations—if indeed a parcel of rude huts, indifferent beds, and the plainest possible fare, can be called accommodation. At each place there were about 250 visitors, such as I have described them ; yet, how few are now remaining ! I recollect half a dozen—possibly there may be a score. Yet this is life, and this is the fleeting phantom we cling to with so much tenacity.

But let me not cast a shade over the cheerfulness of my readers by such reflections. I would rather see them cheerful and happy. I cannot accompany them now in long and pleasant walks, over sunny hills and shaven meadows, through lovely glens, by sweetbriar bushes and clustering hawthorns, along purling streams and limpid rivulets ; but they can take my little, unpretending book as the companion

of their rambles, and when they gain the summit of one of those conical hills that look down upon the valley, let them cast an eye over the rich alluvial fields, covered with extensive and luxuriant crops of Indian corn—one of the most agreeable objects the sight can rest on, with its long, deep green leaves, gemmed with dew and glistening in the morning sun; and let them behold the vast meadow studded densely with stacks of new-mown hay, and hear the kine lowing amid the exuberance of rich pasturage, and the pretty lambs bleating for their dams that are busily engaged on the hill's brow, cropping the low but sweet blue-grass, and let them quaff in the sweet odors of the hawthorn blossoms—and after they have admired all these beauties of opening summer, let them linger among and revel amidst those innocent delights.

And now, when autumn's first breath shall have seared the earlier foliage, let them look again through the vista, along the dense forests that invest the magnificent ridge called Peters' mountain, and view amidst the sombre foliage of the oak, pine and hemlock, at intervals, the gay-looking dogwood, most gorgeous in its decay, like a lovely maiden having the flush of consumption on her damask cheek. When they have seen these, and the majestic poplars, like *pontiffs* in their robes, let them now trace their course along the rippling stream, and admire the lowly *cardinal* flower in his vestment of scarlet,

and look into the stream and see the speckled mountain trout disporting in the cold and lucid waters—and after they have seen these, and innumerable other pleasant objects, they may say, the author of this little book has been here before us—he has enjoyed all these rural delights !

Let us now return from our excursions, and take a nearer view of the immediate vicinity of the Springs and the improvements that encompass them.

The most striking and important object that meets the eye is the majestic HOTEL, of admirable proportions and *magnificent distances*. A lame man, like myself, would require a carriage to go from one end of it to the other. It is 250 feet long by 48 wide, and, including the basement, is three stories high. It has three grand porticoes with piazzas intervening, and altogether has a most imposing appearance. The basement is divided into kitchens, and various departments for domestic purposes, with a bar-room and two reception-rooms, one for ladies and the other for gentlemen. The middle floor has a dining-room 160 feet by 48, a ball-room 40 by 48, and a drawing-room 40 by 48 feet. In the third story there are thirty-six bed-rooms with an entry between them—they are about 14 feet square.

Such are the dimensions and such the proportions of this vast edifice, built of brick, with walls as thick as those of a fort, and piers as massive as its buttresses. It looks as if it would take a broadside

of Paixhan guns to batter it down. And yet, what big guns would scarcely do, the little, silent, trickling drops of rain will effect ere many years, if the property on which it stands remains much longer before the court of appeals. It was still unfinished when it passed from the hands of its enterprising founder, and it is now fast dilapidating for want of a permanent owner. The property has, for several years, been annually rented out at auction by the sheriff. For the next season, (1851,) it is to be in the hands of Messrs. C. J. Beirne and Thos. Johnson, enterprising, active, estimable men, who will no doubt manage it in the best manner for their own interest and the comfort of their guests.

The other buildings are frame cottages and cabins, connected or isolated, spread over the umbrageous and extensive lawn. These, with the hotel, are sufficient to accommodate 250 persons. The trees, like those at the White Sulphur, are the remains of the primitive forest, and are truly magnificent—oaks, elms, sugar maple, hickory, &c. The late proprietor planted some locust and other trees, that also ornament the place.

This is the gayest of all the Mineral Springs. It is the last place visited before the company are thinking of home. Any little reserve that may have interfered with social intercourse at the White and other Sulphur Springs has been obliterated by the acquaintance gradually formed at those places,

and here they meet again as old friends glad to renew their agreeable associations. Restored to health, in buoyant spirits, exhilarated by this invigorating water, their animal spirits are raised to the highest degree of excitation, and the merry laugh, the song and dance testify their happiness.

If some ascetic being, who thinks piety consists in a long face, were to look in upon their mirth, he would think them fit candidates for *Tartarus*. Is man so constituted by nature that he must be a fanatic on some subject? It is not so. The truly benevolent man is never a fanatic or a bigot. He loves God's creatures because they are God's creatures. He does not tie down all mankind with the little cord that binds the bigot's pinched up, puckered, ricketty person. He looks with pleasure on the young enjoying those harmless amusements appropriate to their age, and delights in seeing all his fellow-beings cheerful and happy. I would rather take my chance for Heaven with such a man, than with the self-sufficient Pharisee, who has prayers on his lips and wormwood in his heart, as if God were the little, envious, malignant thing he is himself.

Let me now approach the noble fountain—second only, if second, in volume of water to the Warm Springs. The stream which supplies the drinking water rises from the earth, and is confined in an oblong octagon reservoir about seven feet deep. The

surplus water discharges itself into the gentlemen's bath, and forms a magnificent spout, under which the bathers place themselves and enjoy indescribable luxury. The temperature of the Spring is about $74\frac{1}{2}^{\circ}$, and that of the Baths $73\frac{1}{2}^{\circ}$.

The *Baths* are two in number, of equal dimensions, about 20 feet square—with dressing rooms and fire-places. They are under the same roof, but separated by a brick wall such as might defy *Pyramus* and *Thisbe*, and having entrances on opposite sides of the building.

If a German Doctor had such fountains as these to describe, his enthusiasm would carry him to the third heaven. He would imagine his body was immersed in celestial ether, and his head resting on the bosom of an angel. From the bottom of this pool, as also at the Warm Springs, arise innumerable bubbles of the size of a pea. They emerge from the pebbles with a whiz, and rise in myriads to the surface if they meet with no impediment. They seem to be chasing each other from their fairy world, as if in merry sport, and laughing at their own antics. When the bather places himself among them they strike him all over his body—pat, pat, pat. It is said these sounds are so distinct that an Irishman, once immersed in their midst, thought they were calling him away to the land of spirits, and, filled with terror, rushed from the pool. I, however, think my countrymen too gallant to exhi-

bit any such timidity, and do not believe one word of the story, although told by one of themselves. Another version, and one more probable, is, that he fancied the “good people” were hitting him with young potatoes—an operation at which he was vastly amused.

And thou, Sir Francis Head ! I would fain invoke a few coruscations from thy genius, to tell my readers how the old may become young, and the young become *Narcissuses*, or *Dëiopeias*, by bathing in these pellucid waters, but there is too little poetry in my composition for such an attempt.

All fancy being laid aside, however, there is, there can be nothing on the habitable globe superior to these Baths, in their beautiful clearness and their invigorating effects on the human frame, when it is not laboring under any actual organic lesion. The pools are five feet deep, yet so clear is the water that you would not suppose it two feet. It reminded me of the Bahama Shoals, but it is infinitely clearer.

When a person to whose case this water is adapted comes out, after a suitable period of immersion—say from five to ten minutes, according to circumstances—in the act of rubbing dry, his skin becomes as red as a perpetual rose, and he feels as if he were in truth not treading on earth. It is, however, necessary to this favorable effect that there should be no important lesion or inflammatory action of the internal organs. The use of the Sweet

Spring water, valuable as it is when properly applied, is in many cases extremely hazardous. It may be deemed unfortunate that there is no reliable analysis of this water to guide us; but experience, running back many years, enables me to form, I trust, a tolerably correct estimate of its virtues. There can be no doubt that its distinguishing characteristic is carbonic acid gas. By means of this it holds in solution the several alkaline ingredients it contains, and this also imparts to it that brisk, champagne-like sparkling which it exhibits. This, too, is the source of that exhilarating quality for which it is so remarkable.

The temperature, as has already been remarked, is about $74\frac{1}{2}^{\circ}$. This and the sub-acid taste render it by no means agreeable on first acquaintance, but a little perseverance on the part of the drinker will result in his tolerating it, or, as is almost invariably the case, his becoming exceedingly fond of it.

The condition of the system in which this water is indicated is *debility*, *pure debility*, unaccompanied by organic lesion or inflammation. Let it be well impressed on the mind of the visiter, that if there be a *congested* condition of any vital organ, this water is improperly used. Let me suppose that a Southern man with an engorged liver were to drink this water and plunge into its tempting bath, what would be the almost certain consequence? Chill, fever, effusion, death. This opinion is not lightly

given. I have to give a lamentable illustration of such a result in treating of the Red Sweet, the action of which is analogous to the Sweet, though still more inappropriate in such cases as that to which I have alluded. Need I then say, that in bilious temperaments, a course of Sulphur waters is desirable as a preparation to both these tonic agents? I hope my remarks on the Hot Springs and White and Salt Sulphur have given the reader some useful instruction in this regard. But, it is not engorged or torpid liver alone that will not admit of these waters. No matter what organ is involved, if it be in a congested, inflamed or even irritated condition, these waters are not suited.

Is there a case of chlorosis dependent on *anemia*, from want of nutritive food, or from some mental malady, or abnormal functions—then the Sweet Springs water externally and internally is invaluable. Is there a case of amenorrhœa, usually the accompaniment of the former, dependent on the same causes—this water is the proper remedy. Have excessive labor and care, or anxiety of mind, or youthful imprudence, reduced the *strong man* to the timid, nervous, melancholy, despondent condition of hysteria—let him hasten to the Sweet Springs.

These waters quicken the circulation, impart tonicity and vigor to the system, excite the animal passions, cheer the spirits, and inspire the mind with pleasurable sensations. Aged persons espe-

cially will find vigor and elasticity at the bottom of this noble fountain. A man who could have an opportunity of daily plunging into the Sweet or Red Sweet bath might live to the fabled age of the crow. The former venerable owner of the latter place takes this plunge every day, winter and summer, and is approaching the patriarchal age of four-score years.

But let the sanguineous, plethoric, apoplectic temperament, whether male or female, be cautious in the use of these waters. Females, who may by any probability be in a *delicate condition*, or who are liable to severe periodical hæmorrhages, should not use the water internally or by bathing. I have already intimated the forms of uterine disease in which they can be used with advantage; but in every abnormal condition of this organ, medical advice is necessary, and should never be dispensed with.

In certain cases of *dyspepsia*, and in some nephritic diseases, this water is extremely valuable.

In tuberculous conditions of the lungs, in bronchitis, in organic diseases of the heart, in engorgement of the liver or spleen, in dropsical effusions of the thorax or abdomen, in jaundice, in hæmoptysis, in menorrhagia, in hæmorrhoids, in idiopathic paralysis, in all idiopathic affections of the brain, these waters are *contra-indicated*.

In that protean disease—neuralgia—they are of-

ten useful, and sometimes hurtful. In sprains, dislocations, old injuries, in many cases of rheumatism, and in cases of erratic gout, they are valuable. In want of power, caused by early indiscretions or the inordinate indulgence of sensual pleasure, these waters, and, *a fortiori*, the Red Sweet, are perhaps *unrivalled*.

There is one practice prevailing at this place and the Red Sweet Springs, so pernicious, that it cannot be too severely reprobated : I allude to the potations of mint julap and other spirituous mixtures after coming from the bath.

Incalculable injury may be done by this abuse, and I have little doubt that many cases, said to have been injured by this water and bath, may be fairly traced to mint julaps. The persons who indulge in this insidious mixture are usually gross, plethoric, sensual men, who of all others should be most afraid of such indulgences, and least need them. A feeble, *anemic* person, such as I have described in a former paragraph, may, with great advantage, take a weak mint julap and a cracker, or a cup of coffee or chocolate, or a glass of boiled milk, or any other nourishment that suits the individual case ; but the gross, sanguineous bather needs no such stimulus. It will be well if the water itself does not excite him overmuch.

As I shall offer some remarks on the hours and manner of bathing at the thermal waters, it is

scarcely necessary to trouble the invalid here with details. An empty stomach, a comfortable condition of the feelings, the absence of anything like chilliness of surface, prompt, fearless and brief immersion, a vigorous application of the towels by the bather and attendant—these are the requisites towards a successful experiment.

If, on being thus rubbed, the system remains chilled, and the surface shews goose-skin, and the spirits are depressed and the heart is oppressed, then let the bather avoid a repetition. In such a case a mint julap, or a cup of hot tea or coffee, may do him good, but farther experiment is hazardous.

I feel I should be doing injustice were I to omit mention of a modest, retiring, but skilful and experienced gentleman, Dr. Tyndal, the resident physician at the Sweet Springs. He has for the last 25 years been a constant observer of the action of all the mineral waters in this region, but especially of this, the Red Sweet and the White, Salt and Red Sulphur Springs. His advice, therefore, may be valuable to the visiter of these neighboring Springs, and I am only performing a duty in calling attention to his claims.

CHAPTER XIV.

RED SWEET SPRINGS.

At a distance of one mile from the Sweet Springs, on the road leading to the White Sulphur, are the Red Sweet Springs, first owned and improved by Philip Rogers, Esq., subsequently purchased and still farther improved by John R. Sampson, Esq., and recently sold by him to Messrs. C. Bias and Samuel V. Gatewood.

The Red Sweet Spring is a chalybeate, and a most powerful agent in cases that admit a tonic treatment. This is an advantage which this establishment possesses over its neighbor, having, besides, the same kind of water which is so abundant at the "Sweet Springs." The acidulous or "sweet" waters at both establishments, seem to be so much alike, that there can be no essential difference between them, and as they are situated in an abundant region and on the great thoroughfare connecting Eastern Virginia with its trans-Alleghany territory, we hope that, notwithstanding their proximity, they may do a good business.

The situation of these Springs is a beautiful one, overlooking one of the most fertile and best cultivated farms in Virginia. The celebrated Beaver-dam falls are on this farm, and about a mile and a half from the Springs.

The original name of these Springs was "Red Springs," but, in consequence of mistakes frequently having occurred in the direction of letters to this place and the Red Sulphur, the name at the head of this article has been adopted.

The main building here is of frame, and judiciously designed as regards convenience, but being thrown across the valley, as in the case of the Sweet Springs, it is destructive of the natural beauty of the locality. It contains thirty comfortable chambers, a ball-room, dining-room and bar-room, and has two galleries of two stories, extending the whole length, communicating at intervals by open passages, in which there are stairs leading to both stories. Nowhere have I seen a more convenient arrangement than this. It has but one fault, and that is, that the double rooms communicate lengthwise, instead of enjoying the advantage of both porticoes and the delightful draught that passes through the valley. There is a beautiful range of cottages running through the lawn, which, having been last year extended very considerably, this place can now take in about 120 persons.

The great Red Springs, which are most relied

upon for bathing, issues from a limestone stratum, covered to a considerable depth by a soft porous stone, apparently a deposit from the Sweet Springs stream, which seems to have once taken that direction. There are three Springs, of which the upper and boldest seems to differ in composition and temperature but very little from the Sweet Springs. The two others close by, and separated from each other by a thin partition of rock, differ materially in the quantity of iron and temperature from the first, the temperature of those being $78\frac{1}{2}^{\circ}$, while that is only 73° . All, together, would probably discharge 250 gallons in a minute.

The bathing-house is a large building, probably 40 feet square, divided into two apartments as at the Sweet Springs, each apartment being furnished with dressing-rooms, &c. The water is conveyed by trunks to the reservoirs, and, by reducing the depth of the basin to four feet, it affords the finest spout imaginable. After swimming about for two or three minutes, it was my custom to place myself under this noble stream, and let it fall on the chest and shoulders. I never was tempted to remain in *longer* than five minutes; I then got upon the platform, took in hand a towel and dried the head and neck, while a servant was engaged in rubbing the body with all his might. In two minutes, when the water is likely to suit, the skin becomes as red as crimson under this operation, and the person feels as

if he could jump over the moon. I am disposed to think that *some* cases in which there is no re-action, are attributable to bad rubbing, and permitting the body to get chilled. I would strongly recommend to the proprietor to have two rubbers instead of one—a man and a small boy for the gentlemen, and a maid and a little girl for the ladies.

After getting out of the bath, the person should stand on a platform a few inches elevated from the floor. In this should be some grooves to carry off the moisture from the feet; the junior rubber should then kneel down, and with a coarse towel dry perfectly the legs and feet, while the bather and aid are employed on the head and trunk. With one rubber the feet are apt to be left too long wet, and the circulation is thereby delayed from the inferior capillaries.

A few paces below the hotel there was a large and very pleasant bath similar to the Sweet Springs; it was, however, but little used, most persons preferring the higher temperature of the Red Spring. The difference is very perceptible to the feelings. Both were delightful after the shock of the plunge was over, which in the Red Spring water is slight. My experience of the two baths, which I used for the purpose of experiment, caused me to give a decided preference to the Red Springs bath. I am disposed, however, to think that its advantage lies more in the higher temperature than in the carbon-

ate of iron it contains, though I can readily believe that this property may increase its tonic power. Whether it be so or not as applied to the skin, nineteen out of twenty will think so. As a drinking water, its tonic property is acknowledged, and where such an agent is desirable, it is not to be surpassed on the habitable globe.

The house over the bath near the hotel is now removed, and it is converted into an open pool some twenty feet in diameter. Kept clear of vegetable growth, it would be an agreeable object, but such was not its condition when I saw it last.

The following is an extract of a letter received from the late proprietor :

“ RED SWEET SPRINGS,
“ *Alleghany Co.*, Feb. 16, 1846.

“ I have tested the relative temperatures of the Springs by a thermometer purchased of Mr. Randolph in Richmond, made by McAlister of Philadelphia, and find them to be as follows: The Upper Spring, which discharges much the greater portion of the water, I find to be 77° . The next, or Middle Spring, 80° , and the Lower, or nearest the bath-house, 79° . These three Springs discharge three hundred and fifteen gallons of water per minute, by measurement this day made, and will be blended into one stream, and then divided between the two baths, which will make their temperature

about 78° . I have also tested the two Springs near the hotel, both of which stand at 75° . The temperature of the pool is 74° , and this difference is caused by several little limestone springs emptying into it. This pool discharges two hundred and twenty gallons per minute.

“I remain, dear sir,

“Your most ob’t serv’t,

“JNO. R. SAMPSON.

“P. S.—Below you will find a copy of the analysis by Prof. Rogers, taken from the copy recorded in my register at the Red Springs.

“J. R. SAMPSON.”

1st. Solid matter procured by evaporation from 100 cubic inches, weighed after being greatly dried at 112° , 40.76. A portion of this is combined water.

2d. Quantity of each solid ingredient estimated as perfectly free from water. In 100 cubic inches :

Sulphate of lime,	-	-	14.233
Sulphate of magnesia,	-	-	3.107
Sulphate of soda,	-	-	1.400
Carbonate of lime,	-	-	9.411
Carbonate of magnesia,	-	-	1.166
Chloride of sodium,	-	-	0.037
Chloride of magnesium,	-	-	0.680
Chloride calcium,	-	-	0.010
Susquioxide of iron,	-	-	0.320

Organic matter in small quantities.

Iodine, a mere trace.

The iron is no doubt dissolved in the water as a carbonate.

3d. Volume of each of the gases contained in a free state in 100 cubic inches of the water:

Carbonic acid, - 46.10 cubic inches.

Nitrogen, - 2.57 " "

Oxygen, - .20 " "

Sulphuretted hydrogen, a trace too small to be measured.

4th. Composition of 100 cubic inches of the mixed gases rising in bubbles in the Spring:

Nitrogen, - - - - 62.5

Carbonic acid, - - - - 37.5

It seems entirely unnecessary to review again the class of diseases to which these waters are applicable, being almost identical with the Sweet Springs. It is proper, however, to remark, that as a drinking water the Red Sweet offers superior advantages in many cases.

The great difficulty in the administration of preparations of iron is, that after a time they disagree with and irritate the stomach. Now this water holding the iron dissolved in carbonic acid, this difficulty is obviated, and the water may, with a little management, be used for an indefinite time.

In the year 1845, I was a visiter at these Springs for several weeks, during which time I was enabled

to make numerous observations on the effects of the water, which generally proved roborant, exhilarating, stimulating. I witnessed one case, however, in which the use of this water proved promptly fatal, and I mention it as a caution to others who may be similarly affected.

One day, as I left the bath, I was met and accosted by two gentlemen who had just arrived from the White Sulphur. One of them was about 60 years of age, vigorous and healthy. His friend, however, about 45, had a very different appearance. He was as yellow as an orange, with bile apparently diffused all through his system, the abdomen tumid, and the hand presented cold and corrugated. They asked if the bath was vacant, and I answered in the affirmative, asking the invalid if he meant to use it. He replied that he had come with that intention. I told him it was the last place he should have come to, for that the water was evidently not adapted to his case. He replied, however, that he was especially urged by a medical man at the White Sulphur, to use the water internally and externally. They passed on—the invalid took the bath, his system did not react, chill followed, fever supervened, coma soon succeeded, and in two or three days after, we followed him to the grave.

Now, I do not mean to assert that this man would, under the best circumstances, have recovered, and become a healthy man; but I do say that he did

not have a fair chance for his life ; and I think there is a fair probability that had he been sent to the Hot Springs, the result might have been similar to that in the case of Mr. Newsom—recorded in my notice of the Hot Springs.

The boarding establishment at this favorite Spring was admirably kept by Mr. Sampson ; it is to be hoped that the gentlemen who succeed him will give equal satisfaction.

After the above article was written, the following communication was received from the new proprietors :

MOUNTAIN GROVE, Jan. 6, 1851.

Dr. Wm. Burke.

DEAR SIR,

We received yours of the 26th of December, requesting some information in regard to the Red Sweet Springs and its present proprietors, &c., &c.

In answer to your enquiries, we have to state that the Red Sweet Springs were purchased of Mr. Sampson on the 28th of September last, for the sum of \$40,000, by C. Bias of Memphis, Tennessee, and Samuel V. Gatewood of Bath county, Virginia. The property consists of the Springs and improvements, and between sixteen and seventeen hundred acres of land.

The improvements contemplated at present are, a cottage containing eight rooms, adjoining the one built by Mr. Sampson last season, and of the same style as those on Baltimore Row at the White Sulphur Springs, and now under contract. The next improvement is to be a large and extensive building 150 feet long by 32 feet wide, two stories high, the basement to be for a dining-room, and the second story to be fitted up in handsome style for a ball-room and parlors; the building to correspond with the hotel. We intend to fit up and finish handsomely a billiard-room, to improve the ten-pin alley by laying down another track, and finish the house off handsomely. We will have a reading-room furnished with the most prominent papers published in the United States.

These are the improvements contemplated for the ensuing season. The number of chambers will be about 100, the number of visitors that can be comfortably accommodated about 175. We contemplate extending and enlarging, so as to meet the increasing demand from year to year. We expect a daily line of stages from Callaghan's up Dunlap's creek to the Red Sweet, as well as the daily line from Charlottesville *via* White Sulphur Springs.

The character of the improvements made by Mr. Sampson last season was very excellent, neat and comfortable, consisting of a handsome cottage with eight rooms, and a large two story house with double

porches, containing many rooms—the number we do not recollect at present.

We have not your book referred to, or we would be better prepared to give you more satisfaction.

Very respectfully,

Your obedient servants,

BIAS & GATEWOOD.

CHAPTER XV.

THE SKIN.

Before I enter upon the thermal waters, I desire to say a few words on that beautiful organ, which, above all others, distinguishes man from the inferior animal creation, and which in lovely woman frequently attains such exquisite perfection as to place her second only to the angels.

The skin being one of the great safety-valves of the body, though perhaps the least regarded by the mass of mankind, and especially by that portion yclept "the Anglo-Saxon race," is amongst the most important organs of the human body.

Had nature required of the kidneys to secrete all the impurities of the circulation, they would be inadequate to perform the labor, at least without vastly more power than they now possess ; she has, therefore, in her wisdom, invested the external covering of the body and the mucous surfaces of the internal organs with an exhalant apparatus that frees the blood from those serous portions that are no longer necessary for the body, and from an excess

of carbon and other matters that might deteriorate its quality, just as the absorbent system appears to have been intended to introduce new and alternative materials into the system for its comfort and sustenance. How deeply the skin sympathises in all important lesions of the great organs of the body, is known even to ordinary observers, yet it *has* never received that consideration to which it is entitled. The march of improvement, however, is onward, and we should never despair of effecting a reform so obviously important as that of cleanliness.

In our Southern country especially, there is an urgent necessity for frequent ablutions, owing to the relaxed state of the system, produced by intense heat, and the consequent evaporation of the serous portion of the blood through the superficial covering of the body. In such a condition of things, the balance between the excreting functions of the skin and kidneys is destroyed, and the former has to perform a duty, which eventually overpowers its energies; its action becomes morbid, and it is no longer able to resist either the impulse from within, or the sudden depression from cold to which it is exposed from without, by extraordinary and sudden vicissitudes of temperature.

We know, however, from the experience of Eastern nations, that like all other hygienic principles, the salutary practice of bathing is liable to abuse.

Carried to excess, and accompanied by the use of powerful narcotics, it is pernicious to the physical, mental and moral energies. It should then be resorted to, not exclusively as a luxury, but as a means of cleansing the skin from accumulated impurities, and encouraging a just proportion of the fluids to the capillary circulation.

The manly exercise of swimming, when it can be practised, cannot be too strongly recommended. In the palmy days of Rome, the river Tiber was not permitted to roll its waters to the sea neglected and unheeded. It was the constant practice of the Roman citizens to disport on its bosom, after they had anointed their bodies as a protection against the coldness of the water. Of its efficacy in procuring sleep we are assured by the satirist :

“Ter uncti
Transnanto Tiberim somno quibus opus est alto.”

With regard to the wealthy, who are able to afford all the conveniences of bathing, if they do not avail themselves of their advantages, it is their own fault, and they deserve no sympathy; but it is otherwise with persons of moderate circumstances living in cities, and workers in manufactories. Their health demands the care of the public authorities and of their employers. In the manufactories of this country, which have almost all extensive water power, how easy would it be to pro-

vide a large bathing chamber, in which all the laborers, male and female, should be required to bathe at least once a week. It would be easy to raise the temperature of the water to about 85 or 90° Fahrenheit.

In an establishment giving employment to two hundred persons, five cents a week deducted from the pay of each would amply pay the proprietor; and in a mere *pecuniary* point of view would be a saving to the laborers, who may thereby be saved from many ailments that cause loss of time. But I would not stop here: I would recommend to the legislatures, whenever application was made for an act of incorporation by a manufacturing company, to insist on a proviso obliging the corporators to provide a convenience such as I have described, and to insist on its use. Whenever temperance shall have become universal, and conveniences for bathing shall have been furnished to the great mass of the inhabitants of cities, and the more enlightened and opulent portion of the community will have, by their own example, induced the poorer class to adopt this great hygienic practice, we may look for an advance in the average of human life and human *morals*, which now might seem unattainable.

Without entering into any very minute detail of the constituents of the skin, I may briefly say, that it consists of two *strata* or layers—the scarf skin and the true or sensitive skin.

The former is an exudation from the blood-vessels to the surface of the latter, which, by aggregation and nourishment from the same source, becomes organized and continuous, and is constantly being produced to compensate for the loss of friction on its surface. It is composed of albumen, and it is therefore that alkalies and soaps are used to purify it. These ablutions leaving only the new scarf skin, the sensibility of the skin is increased, but when they are neglected, on the contrary, it is greatly diminished.

Of all cosmetics the fair sex can use, the most efficient and harmless is good plain soap, which deterges the skin by combining with the oily matter, and at the same time softens the scaly scarf and dislodges it.

It is in the deepest stratum of this epidermis that is lodged that coloring matter which, by its degrees of shade, gives characteristic color to the various races and nations of the earth, from the black negro to the fairest Anglo-Saxon. In the same individual, there is a considerable difference in the intensity of this pigment in summer and winter, being deeper in the former, and more blanched in the latter. To have a beautiful complexion, the ladies must guard it from the influence of hot fires, burning winds and great changes of temperature; but the best security against the latter would be the daily use of the shower-bath.

The great object of the scarf skin is the protection of the true skin from bruises and all manner of injuries, and to this it is beautifully adapted by being moulded exactly to correspond with all its irregularities.

The nails also, those beautiful appendages of the human hand, deserve the care of the fair sex, for in truth, they are often unmistakable evidences of negligent habits. They require no other treatment than, after washing, to rub the extremity of the scarf back from the crescent at their upper end, and to keep them from too close contact with the teeth. To see a beautiful young lady biting her nails is execrable. She deserves a husband that chews tobacco.

It might be interesting to the reader to take a view of the formation of the *dermis*, but it would lead me away from my immediate object, which is simply to direct attention to the important functions of this emunctory of the body. It is divided into two layers—the papillary and corium. The former is the sensitive, and the latter the defensive layer. It is in the surface of the sensitive skin that the blood is distributed by small arteries passing through the *corium*. Here they discharge their freight into the reticulated vessels called capillaries, which, having diffused it all over the surface, and through their porous texture, give egress to oxygen and nutritive portions of the blood, and gathering up the

exhausted and carbonated materials, throw them into the veins, which conduct the now impure stream to the right cavities of the heart. Hence it is forced through an artery into the capillaries of the lungs, where it is oxygenated, and sends off its carbonic acid through the permeable vessels to be discharged from the lungs with the expired air, and is itself carried back in a purified state by special veins to the left chamber of the heart. About one-fourth of the venous blood, however, is distributed to the liver, and yields material for the bile before it arrives at the right side of the heart. The great filters of the venous blood are the lungs and liver, while the kidneys and skin are the emunctories of the arterial blood.

Certain emotions of the mind, by bringing the arterial blood rapidly to the surface, produce blushing, and again the depressing passions, by repelling the blood upon the internal organs, produce extreme pallor. The yellow hue of jaundice is caused by the mingling of the color of the bile with the blood, and that of chlorosis also, by deranged function of the liver, and by deficiency and poverty of the blood.

I shall next take a cursory view of the *perspiratory apparatus*, some idea of which is necessary towards appreciating those medicinal agents of which I shall soon have to treat. It consists of small tubes passing from the exterior scarf skin through the two

inner layers, and terminating in the corium. In their passage, they form a spiral coil, and on arriving in the interior of the corium, they are twisted into a little globular ball, known as the perspiratory gland. Its mouth on the scarf skin is called a *pore*.

It is estimated by Dr. Erasmus Wilson, to whose admirable work on the skin I am indebted for these details, that each coiled tube and its gland being one-fourth of an inch long, and there being on a square inch of the palm of the hand 3528 pores, there is on one square inch a length of tube equal to 882 inches, or $73\frac{1}{2}$ feet. He takes 2800 as an average of the pores on a square inch of the whole surface. The number of square inches of surface in a man of ordinary size is 2500; the number of pores, therefore, 7,000,000, and the number of inches of perspiratory tube 1,750,000, or nearly 28 miles.

In a healthy condition of the body, perspiration, though not perceptible, is nevertheless always progressing, and this is styled *insensible* perspiration; but from increased exertion or the exaltation of temperature by any means, it becomes *sensible*, and frequently copious.

There are two functions performed by perspiration—one, to regulate the temperature, and the other, to remove from the system noxious compounds. It is estimated that 8 grains of perspiration are exhaled by the skin in a minute, equal to 33 ounces in 24 hours—about 1000 lbs. in a year.

An analysis of one hundred parts of the solid matter of perspiration gave the following results:		
Osmazone combined with common salt,	48	parts.
Lactic acid salts, with osmazone,	29	"
Animal matter, with vitriolic salts,	21	"
Calcareous salts,	2	"
	—	—
	100	"

To these may be added carbonic acid gas, ammonia and iron, and, in rare instances, copper.

When perspiration is checked, the whole weight of separating these matters falls upon the liver, kidneys and lungs—a task to which they cannot long be subjected without inducing disease in one or all.

The skin performs yet another function—that of absorption, by which fluid substances are taken into the circulation. It is proper to bear this also in mind, since we will find that in bathing no inconsiderable portion of mineral water may thus be introduced into the system.

Besides the perspiratory tubes, there are oil tubes and glands for secreting an unctuous fluid or sebaceous substance for lubricating the skin, and giving it softness and brilliancy.

Passing over, for the present, the effects of food, exercise and clothing on the skin, I proceed to the effect of bathing and ablution as a hygienic agent.

From the sketch that has been given of the scarf skin, it is readily understood that it is liable to have incrustations formed upon it by the matter perspired, the product of the oil-glands and the aggregated dirt from the atmosphere. If these remain, the pores will be closed, perspiration obstructed, and all the proper functions of the skin suspended, and, as I have already observed, an undue and unnatural action will fall upon the internal organs. They must imperfectly eliminate the poisonous substances thrown back upon them ; and the almost inevitable consequence will be, that the weak organ will give evidences of disease, and that consumption, renal or hepatic disease, or diarrhoea may supervene.

Water and soap are the means by which we may get rid of those impurities, and they are both, fortunately, within the reach of almost every one ; and for the purpose of mere ablution, a basin of water and a sponge or towel are all-sufficient. This should be practised at least once in 24 hours, and with a degree of temperature of the water varying, according to circumstances, from tepid to cold. But this, which is well so far as it goes, is not sufficient for securing the hygienic advantages of bathing, and for these we must have recourse to more copious affusion.

The most convenient and delightful method of domestic bathing is the shower bath. Modern im-

provement enables a man to have the apparatus in his chamber or dressing-room, to which he may step directly from his bed, and be afterwards rubbed dry before his fire in winter. In former times, it was not uncommon to have this fixture in a damp basement or out-house, and it may readily be imagined that as much injury as benefit was likely to accrue from its use. If the person desirous to establish this habit will commence with tepid water, and gradually use a lower temperature until he reaches the cold, he will become so disciplined to the shock as scarcely to regard it, and the succeeding glow is so exhilarating and bracing, that he is rendered uncomfortable if by any chance he misses for a day its luxury. This I can affirm from my own experience. Whatever may be the mode of bathing, one consideration is all-important, and that is, the establishment of a prompt and vigorous reaction.

This reaction is thus produced. When the surface is suddenly subjected to the shock of cold water, the capillaries contract, and throw the blood rapidly on the internal organs. The nervous system is stimulated and compels a vigorous action of the heart and arteries in sending it back to the surface, a glow follows, the skin looks red, the respiration is easy, the spirits are buoyant, and the whole man is invigorated.

But if, on the contrary, goose-skin supervenes,

and chilliness and yawning succeed, and an uneasy respiration, and a sinking at the heart—then let the bather beware how he repeats the experiment.

When these last symptoms appear, they indicate that the system is not in a suitable condition to bear the action of cold water—which may be owing either to diseased function or actual lesion of one or more organs. When the constitution is feeble, all extremes should be avoided ; and a bath too cold or too warm may do irremediable injury, while one carefully adapted to the powers of the system would refresh and invigorate it.

Judicious advice, therefore, is of primary importance to the invalid in using the bath, either above or below the temperature of the surface of the body ; and it cannot be too earnestly impressed upon him, that he must regulate the time of remaining in the bath according to his physical energies. Five minutes is time long enough for a feeble person, and few will be benefitted by remaining longer than fifteen minutes. To aid in reaction, the bather himself should work hard with his towel, if he is able, while the attendant briskly rubs the feet and lower limbs perfectly dry.

The temperate bath, ranging from 75 to 85°, and the tepid bath, from 85 to 95°, act as sedatives to the nervous system, diminishing the number of pulsations of the heart, and disposing to sleep.

The warm bath, ranging from 95 to 98°, accord-

ing to the condition of the patient, may be sedative or stimulating.

The hot bath, ranging from 98 to 106°, is decidedly stimulant.

Having made all the necessary preliminary remarks, I now enter on the consideration of the thermal waters, and shall begin with those known as the *Warm Springs*.

CHAPTER XVI.

WARM SPRINGS.

These Springs are situated in a beautiful but narrow valley in the county of Bath, between two ranges of lofty mountains, running parallel from N. E. to S. W., lying about 170 miles nearly west from Richmond, and on the direct turnpike road leading through Staunton, and by the Hot and White Sulphur Springs, to Guyandotte on the Ohio river.

The views from many points of the Warm Springs mountain, especially from the *gap* where the road crosses, and from *the rock*, 2700 feet above tide-water—are much celebrated for their grandeur.

The *rock* is no less celebrated for a feat of horsemanship performed by the late and much-lamented Mrs. C——n, who rode her spirited but docile horse to its summit, and in her saddle saluted the glorious orb of day emerging from the distant horizon. It is said that her daughter has recently performed the same hazardous exploit; and I can well believe it, from the grace and skill with which she manages her steed.

The grounds are broken in upon by the public road, which renders an ornamental and appropriate arrangement of them impracticable. Had it not been for this difficulty, and some others equally embarrassing, the correct taste of the proprietor would have rendered it all that it is capable of being made. As matters are, he has shewn good taste in embellishing the place with rare and beautiful flowers and shrubbery.

But there is a charm beyond landscape here—it is the charm of society, without which Paradise itself were a desert, of little interest, and less comfort and happiness. What is isolated man? If he has genius, it is unappreciated. If he has noble sentiments, they spring up only to be buried again in his own bosom. If he has lofty aspirations, they are but day-dreams, that vanish almost as soon as formed, and leave no fruit but regrets. His feelings become as contracted as his association, and even his patriotism is confined within the four walls that enclose himself.

It is therefore not well for man to be alone, and at no time is cheerful society more desirable to him than as an invalid in pursuit of health. Nowhere in the mountains is society on a more agreeable footing than I observed it here. Dr. Brockenbrough, the proprietor, one of the best specimens of the “gentleman of the old school,” and his venerable and elegant lady, reside at the Springs, and with

their beautiful and fascinating grand-daughters, give tone and charm to the delightful association.

Were I a poet, I would endeavor to portray the oldest of those lovely beings, as she descends the mountain of a bright summer morning, seated on her panting thorough-bred palfrey, after a long and rapid ride, her hair flowing down her shoulders and bedewed with liquid gems that fall from the trees, as she passes underneath their dense foliage. Or I would essay to describe her in the ball-room, with that hair combed up in the severest style of classical simplicity. How few heads could bear such a test! It is the style of Mrs. Siddons in the character of the "Tragic Muse," and no brow but one beaming with intellect dare assume it.

The younger, I was informed by a lady, was the Naiad of the fountain, disporting in its lucid waters, and dazzling the eyes of the beholder.

"Then to the flood she rushed; the parted flood
Its lovely guest with closing waves received,
And every beauty softening, every grace
Flushing anew, a mellow lustre shed;
As shines the lily through the opal mild;
Or as the rose amid the morning dew,
Fresh from Aurora's hand more sweetly glows."

But there was one yet—Mrs. R., whose manners seemed to fascinate all who approached her. She sung with much feeling and expression, and I was especially pleased with her "Home." By the way,

her sailor had just returned from a long cruise, and I can imagine that this circumstance detracted nothing from her appreciation of the sentiment of that beautiful song.

Such are the domestic materials—the *nucleus*, as it were, of society at the Warm Springs.

These Springs have long been famed for their mineral and medicinal qualities, having been resorted to by invalids from the tide-water country for seventy years past. The land was patented to the enterprising *Lewis* family, by Governor Fauquier, in the year 1760. Some years elapsed thereafter before there was even a wagon road over the Warm Springs mountain. The traces of a warehouse are still visible at the eastern base of the mountain, where the wagons were unloaded, and their contents transferred to pack-horses, and distributed throughout the Western country, this side of the Ohio river.

Many tales are related by the older inhabitants of this part of the country, of the discovery and use made of those waters by the Indians. One of the most beautiful is the following legend given to Mr. Otis of Boston, as derived from the old bath-keeper, and extracted from his article in the Southern Literary Messenger of March 1838 :

“ A young Indian, more than two centuries ago, was coming from the Western valley of the great Appalachian mountains, towards the waters of the

East, that opened into the beautiful bay whose branches touch the strands of some of the mightiest marts of a nation that was not then in existence. He had never trodden that path before, and nothing but pride of youth, which would not brook that his brethren of other tribes should triumph over him as their inferior in adventure, had sustained his manly heart so far; for he had come, since the rising sun first touched that day the mighty peaks of the Alleghanies, from the vales that lay at their feet on the West. He was going to carry the voice and vote of a powerful nation to the council-fire that was kindling on the banks of the great water, and he felt shame at the recurrence of the idea that the place of the young Appalachian Leopard could be vacant. But the night winds beat coldly around him, and the way was dark. There had been rains, and the earth was damp and swampy; and no grass, or fern, or heather, was at hand with which to make a bed in the bosom of the valley where he stood. He had not strength to climb the near range of mountains that drew up their summits before, as if to shut out all hopes that he could accomplish his ardent desire. Weary, dispirited, and ready to despair, he came suddenly upon an open space among the low underwood that covered the valley where he was wandering, and upon looking narrowly he observed that it was filled with water. He could see the clear reflection of the bright even-

ing star that was just declining to her rest, and that was peeping into the fountain,

‘Like a bride full of blushes, just lingering to take
A last look in her mirror, at night, ere she goes.’

“By this translucent reflection, he could perceive that the water was clear, and its depth he could discern by the pebbles that glistened in the star-light from the bottom. He saw, too, that the water was continually flowing off, and supplying a stream that ran rippling away among the roots of the oaks that surrounded the spot ; and as he stooped to taste the liquid element, he found it warm, as if inviting him to relax his chilled limbs by bathing in its tepid bosom.

“He laid aside his bow and quiver, unstrung his pouch from his brawny shoulder, took off his moccasins, and plunged in. A new life invigorated his wearied spirit ; new strength seemed given to his almost rigid nerves ; he swam, he dived, he lay prostrate upon the genial waves in a sort of dreaming ecstacy of delight ; and when the first dawn of day broke over the rock-crowned hill, at the foot of which the Spring of Strength lay enshrined, the young Leopard came forth from his watery couch, and strode proudly up the mountain ‘where path there was none.’

“He was a ‘young giant rejoicing to run his

course.' Full of new fire and vigor, he manfully sped his way; and upon the eve of that day, when the chiefs and the sons of chiefs were seated around the solemn council-fire, no one of them all was found more graceful in address, more commanding in manner, more pleasing in look, and sagacious in policy, than the young *Appalachian Leopard* who bathed in the ' *Spring of Strength.*' "

With regard to the use of the baths at the *Warm Springs*, it may be safely remarked, that the pleasure and voluptuousness of bathing in them are such as, in a great measure, to supersede the idea of their more valuable properties as medicinal waters; on the principle, perhaps, that remedies grateful to the palate are never so efficacious to the patient as those which are more nauseous. It is not pretended that these waters act as a panacea in all cases, or that they may not be injudiciously used, but many cases might be cited in which the *Warm Springs* bath, especially when resorted to for some weeks, and aided by the internal use of the water, has been attended with the happiest effects.

In *dyspepsia* of long standing, there have been some remarkable instances of permanent cure from a daily bath and half a dozen glasses of water drunk at the fountain, when persisted in for six or seven weeks.

In *chronic rheumatism* and *paralytic affections*, similar effects have been produced by the same course;

but it is the misfortune of those who labor under chronic diseases, that they are prone to expect relief in a short time, and become impatient under those slow and alterative remedies that can alone restore them to health. Such complaints, in nine cases out of ten, yield only to a judicious course of treatment, *long persisted in*. There is no remedy yet discovered by the medical faculty, which will *at once* cure them ; and it is no rash opinion that the Warm Spring bath, with the water taken internally, assisted by proper regimen, moderate exercise and pure air, will have more efficacy in many chronic diseases than all the drugs that can be prescribed by the faculty. The temperature of these medicinal waters affords a gentle stimulus to the surface, and causes it to cast off its impurities, while it disposes the skin to absorb a certain portion of the fluid, with the substances held in solution by it. This, in itself, is of great benefit to the invalid, while to a person in health, the most pleasurable and soothing sensations are excited, particularly when friction is employed on coming out of the bath.

The following analysis of the water of the Warm Springs was made in the year 1835, by Professor Rogers, of the University of Virginia, and is, doubtless, very nearly correct :

“ The large bath is an octagon, 38 feet in diameter ; its area is 1163.77 feet. The ordinary depth

being five feet," (it can be increased to six;) " the cubic capacity is 5818.86 feet, or 43,532.32 gallons; notwithstanding *the leaks*, this quantity of water will flow into the reservoir in one hour. The average temperature of the bath is 98 degrees Fahrenheit.

" The gas which rises in the bath consists of nitrogen, with minute quantities of sulphuretted hydrogen and carbonic acid. Besides this gas, each gallon of water contains 4.5 cubic inches of gas, consisting of—

Nitrogen,	-	-	3.25	cubic inches.
Sulphur. hydrogen,	-	0.25	do.	
Carbonic acid,	-	1.00	do.	

" The saline contents of one gallon of the water are as follows :

Muriate of lime,	-	-	3.968	
Sulphate of magnesia, (Epsom salts,)	-	9.984		
Carbonate of lime,	-	-	4.288	
Sulphate of lime,	-	-	5.466	
And a trace of soda,	-	-	0.000	
				—
			23.706	"
				—

From this account it appears that these waters contain neutral salts and various gases, which act as a gentle aperient, diuretic and diaphoretic. The large proportion of Epsom salts (nearly one-half) is not only ascertained by analysis, but by the for-

mation of the beautiful crystals from the spray, as the water falls over the flood-gate. This salt, doubtless, gives the water its aperient quality, while the carbonic acid and sulphuretted hydrogen give tone and vigor to the stomach. In Europe it is found that the tepid waters tend more to strengthen the digestive organs than those of a low temperature, more especially in gouty patients; but the Warm Spring loses nothing of its aperient quality by being cooled in closely-stopped bottles, and it becomes more palatable to many by that process.

With regard to bathing, some precautions are necessary and proper. No person in a high fever, or under a high inflammatory diathesis, should use the bath; when the inflammatory symptoms have been reduced by evacuants and depletion, he can resort to it with advantage, and will find it to soothe him. From experience it has been ascertained that it is injudicious to go into the bath after a full meal. In the morning, before breakfast, when the stomach is empty, or an hour before dinner, is the best time to bathe. Some persons prefer taking the bath just before going to bed, and it generally produces a gentle perspiration, followed by refreshing sleep, if none or a very light supper has been taken.

Besides the large octagonal bath, there has lately been erected a "Lady's Bath," neatly furnished and of equal depth, and there is now also a "Spout Bath." The "Drinking Spring" is also beautifully

improved and inviting. It is situated between the two great "Baths." I regret to perceive that the Chalybeate Spring, which formerly was seen here, has disappeared. It no doubt sunk through the porous earth, and having been a feeble stream, was lost in the great volume of the adjacent waters.

Dr. Brockenbrough is entitled to the entire credit of another addition to the bathing advantages of this establishment. Alongside the gentlemen's bath, and as a wing to the building, he has erected a room containing a cold plunging bath, which is plentifully supplied with spring water from the neighbouring hills. This enables the bather to use the Russian plan. After spending some 15 or 20 minutes in the warm pool, enjoying a luxury similar to that so eloquently described by Dr. Granville, the bather ascends a flight of steps and plunges into the cold reservoir, of a temperature ranging from 60 to 70°. As may be supposed, the shock is great, but the reaction is prompt, energetic and decided. I say this from personal experience; but, nevertheless, I would not advise a person of feeble or exhausted constitution to use it. Above all, it should not be attempted by a patient suffering from any internal organic disease.

The flow of water from the Spring and baths is estimated at six thousand gallons a minute, and forms a stream sufficient to drive the wheel of a large mill.

The bath in Europe to which the Warm Spring is most similar is Wildbad ; I therefore extract from Dr. Granville's work on the German Spa, some passages that may interest and benefit the visiter of the former :

“ After descending a few steps from the dressing-room into the bath-room, I walked over the warm, soft sand to the farthest end of the bath, and then laid myself down near the principal Spring, resting my head on a clean wooden pillow. The soothing effect of the water, as it came over me up to the throat, transparent like the brightest gem or aquamarine, soft, genially warm, and gently murmuring, I shall never forget. Millions of bubbles of gas rose from the sand, and played around me, quivering through the lucid water as they ascended, and bursting at the surface, to be succeeded by others. The sensation produced by these, as many of them, with their tremulous motion, just *effleuraient* the surface of the body, like the much-vaunted titillation in animal magnetism, is not to be described. It partakes at once of tranquillity and exhilaration—of the ecstatic state of a devotee, blended with the repose of an opium-eater. The head is calm, the heart is calm, every sense is calm ; yet there is neither drowsiness, stupefaction nor numbness ; for every feeling is freshened, and the memory of worldly pleasures keen and sharp. But the operations of the moral as well as the physical man are under

the spell of some powerfully tranquillizing agent. It is the human tempest lulled into all the delicious playings of the ocean's after-waves. From such a position I willingly would never have stirred. To prolong its delicious effects, what would I not have given? But the Bad-meister appeared at the top of the steps of the farthest door, and warned me to eschew the danger of my situation; for there is danger even in such pleasures as these, if greatly prolonged.

“ The temperature of the water at Wildbad is its chief and predominant merit. This has continued the same throughout a long succession of years; and I confess, at once, that I am led, after mature consideration of the subject, both in this case and in the cases of all the Warm Mineral Springs I have visited, to ascribe to *temperature* the principal effects which the water produces on the human constitution. But it is not the *thermometrical* temperature to which I allude, when I proclaim such an opinion; it is to the *caloricity* of the water, which is not to be measured by Reaumur or Fahrenheit; a principle imparted by nature to the Springs in question, from sources which as yet have escaped detection, but which, at no distant period, will probably be found connected with electrical forces, and therefore not appreciable by our ordinary instrument's of thermometrical mensuration. Here, at Wildbad, the range of temperature in the water,

according to Fahrenheit, is the same as that which has been assigned as the range of heat in the human body, when in its healthy state. On the water, therefore, being applied to the human body, the sensations produced are as agreeable as when we enter a bath of ordinary water, charged with the same degree of heat. But there comparison terminates, and all the delightful sensations produced by the mineral bath are looked for in vain in the ordinary bath. Why so?

“ This very circumstance, of the Wildbad water being naturally of that degree of heat which is best suited to the human body, renders it preferable to those warm springs which require either spontaneous refrigeration or the mixture of cold water, previously to their being employed, as at Wiesbaden, Baden Baden, Gastein, Töeplitz and Carlsbad. It is preferable because the patient actually bathes in the very stream as it rises from the earth, and catches the proffered boon of nature at its birth. In fact he bathes in a natural warm river. How inferior to this must be a tub or slipper bath, into which the warm water, previously fashioned into a right degree of heat, is conveyed through pipes and from reservoirs! But there is, in my estimation, a still greater superiority on the side of the Wildbad Spring, as a salutary bath, over every other—no matter how well managed the latter be; and that is, the simple fact that, whereas in all the

other baths the temperature of the water in which the patient is immersed, must and does progressively diminish, in the course of the hour, or half hour even, during which the operation of bathing lasts—that of the Wildbad bath is uninterruptedly the same, for the water continues in its never-varying natural condition.

“ Yet, with all these striking advantages of the Wildbad water, would it be credited that some over-nice, over-scrupulous invalids (I need not repeat which was the country named to me as that whence they came,) have preferred bathing in tubs, and have had such contrivances purposely constructed for their use? As my facetious informant observed at the time—‘ A bath of this kind cannot be called a bath in the Wildbad, but only a bath in a tub of Wildbad water.’

“ The bathing together, when that can be done under circumstances so favorable as at Wildbad, and with the decorum which is there observed, is a source of entertainment conducive to health. People talk of the effect of baths, either from what they have heard, or from their own experience ; and the sick receive fresh spirits from hearing others descant on the good result produced by the water upon themselves. The bathing together in this natural river-head, and the bathing in slippers or tubs, are to each other, in point of health, as a walk with a pleasant companion in the open air is to sitting in a locked-up chamber.

" The Wildbad waters are often taken internally, in conjunction with the baths. They have no other sensible effect than to increase transpiration and the action of the kidneys. While using the baths for any arthritic complaint, a considerable sediment is observed in the increased secretion of those organs. In obstinate gouty and rheumatic complaints, lameness, contraction of limbs, partial paralytic affections and loss of power in the lower extremities, the effects of the Wildbad baths have been surprising, and have been known for centuries. On these points I conversed with and interrogated several of the visitors whom I happened to meet at the hotel I resided in, and whom I always found ready to enter into their cases, when I announced myself to them as a physician. Their testimony, and the reference to their own cases, were quite conclusive.

" After the very first time of using the Wildbad, the sleep at night becomes more tranquil, although an agreeable listlessness is experienced by day, which is followed by a lively motion of the muscles. Dr. Kerner, who is an excellent authority in respect to the Wildbad Spa, is loud in his praises of the bath, as a most powerful agent in removing *particular* obstructions accompanied by *chlorosis* or green sickness. He contends that it brings the blood into a more brisk circulation, and gives to it the necessary degree of fluidity. For the same reason he

warns such as are subject to a flux of blood from the bowels, or spitting of blood, or are prone to abortion, to abstain from these baths; many patients of that class have been sacrificed to the improper recommendation of the Wildbad, by physicians ignorant of its real power.

“ In many obstinate diseases of the skin, in dropsies caused by repressed eruptions or indurated liver, and in all diseases brought on by checked perspiration, the use of the Wildbad cannot be too strongly commended. ‘ They serve, indeed, (concludes Dr. Kerner,) almost to make the old young again; while younger persons, who have become prematurely old, owing to exhaustion, and those who are exhausted by close application and incessant fatigue, rise out of these baths with new strength and youth. They are, on the other hand, injurious in feverish conditions of the body, and in dropsies arising from inflammation brought on by chronic derangement, or stoppages of the circulation, owing to a disorganization of one or more of the important viscera; and they should never be used merely in sport by the blooming youth of either sex.’ ”

“ The late inspector of the Wildbad baths, Dr. Kaiser, used to relate the case of a Darmstadt officer, a Monsieur Berchthold, twenty-six years of age, who had become perfectly lame in consequence of a fall, which had produced an affection of the

right hip, the precise nature of which was never ascertained. Four months after the accident, being able to walk without crutches, but always with the most violent pain, he was sent to Wiesbaden, whence he returned without the slightest improvement. For five months he could not tread upon his heel; and when, thirteen months after the fall, he was able to do so, it caused him the most dreadful sufferings; so that at every step his head was drawn down almost to his hip. In this pitiable and distressed condition he went to Wildbad. The first bath had no effect upon him; the second caused him some pain in the region of the loins; the third increased the pain; but the seventh he was unable to endure—so excessive was the pain it caused. He was taken out of the bath and placed in bed. When he had been there but a few minutes, he felt an indescribable, painful sense of coldness in the impaired limb, which was followed by a copious warm perspiration, particularly around the hips. He now found that he could move his foot freely; and after resting in bed for an hour, he was able to leave it without a stick, and free from pain. Herr Berchthold now walks as straight and upright as if nothing had happened.

“None should be deterred from the further use of these baths because old pains are, at first, revived by them; for such is a sign that the water is acting upon the diseased parts. The smallest scars, which

can often be scarcely perceived, or old cuts in the finger, which have long been forgotten, begin to smart and revive during the use of these baths. Very often pains like these, which are frequently severe, and often aggravations of the disease, are tokens of the beginning of a cure.”

* “It is to be remembered that a majority of the bathers experience the ‘reaction fever’ (*fievre de reaction*) in the course of treatment. The period of its occurrence is uncertain, and often it is so slight as to pass almost unobserved by the patient. This, however, is the critical moment precursory of a cure. This state of irritation seldom lasts more than a few days, and generally disappears without any internal medicine. This reaction is precisely that which ought to inspire the greatest hopes in the patient, as it announces a change in his constitution and a victory over his malady. The disagreeable sensations, however, which he feels, often put him out of humor with the baths, especially if old pains and discomforts, that had ceased, now re-appear, which they often do. He becomes impatient and morose when he is revisited by rheumatic pains, neuralgia, gout, haemorrhoids, &c., which he had thought to be extinct. Such reaction, however, is indispensable towards the victory of nature and the baths over the disease for which they were employed. The waters of Wildbad, indeed, are remarkable for this

*Johnson.

re-production of old disorders, at the moment they are eradicating the more recent ones.

“ It is to be remarked, that it is not in all persons that the reaction above alluded to takes place. In many there is a gradual amelioration of health, without any perturbation of the constitution, and only marked by an increased action in the functions of the skin and kidneys—sometimes of the bowels.

“ On the other hand, (says Professor Hiern) where the malady is obstinate, there is a greater struggle in the constitution, attended with considerable fever, disorder of the secretions, irritation of the nervous system, full pulse, restless nights, distressing dreams, loss of appetite, dry hot skin, occasional hæmorrhoidal discharges, purging, gouty attacks, cutaneous eruptions, &c., which precede a restoration to health.

“ These are trials which require the fortitude of the patient and the vigilance of the physician. It is not to be wondered at, that, when they occur in the stranger, and especially in the English invalid, who has little confidence in the foreign practitioner, and finds himself ill in a secluded valley like that of Wildbad, great alarm should be produced and much prejudice raised against the baths and waters of the place. The worst of it is, that a similar train of disorders may arise from an injudicious use of the baths, and where no salutary crisis is the result.

“Cutaneous eruptions are frequent consequences of the Wildbad waters, and are considered salutary. The kidneys, next to the skin, shew the greatest sensibility to the action of these waters. In some people (especially where the waters are drunk as well as bathed in) a most copious and clear secretion is produced; but this is seldom a critical or salutary discharge. It is when the secretion from the kidneys is deep-colored, sedimentous, and exhaling a peculiar odor, especially in gouty subjects, that benefit may be confidently anticipated. The bowels are seldom acted on by these waters—more frequently, indeed, constipation is the result, requiring aperient medicine, both before and during the course. The haemorrhoidal and monthly periods are promoted by the waters, thus relieving plethoric fulness of the abdominal organs.”

I have given these copious extracts from the two most distinguished authorities on the waters of Wildbad, because they are almost strictly applicable to this celebrated Spring, and because relief may be expected in the same class of diseases, and similar precautions should be observed in their use.

A man may trifle, in some degree, with *drinking* mineral waters; but bathing in them is a very different thing. With regard to the temperature, it is very true that a plain bath of 96° may be considered a sedative, soothing and calming the system;

but when the water is charged with saline matter and active gases, it becomes a powerful stimulant to the sentient extremities of the cutaneous nerves, and that stimulus is extended to the arterial system, and lungs, liver, heart, brain—all feel the impetus. Now there are many constitutions that would be overpowered by such a state of excitement, and the consequence would almost inevitably be the engorgement of some important organ, which might directly lead to the lesion of its structure. It is for this reason that I feel bound to caution patients against too much belief in what Dr. Johnson calls “reaction fever.”

When such a fever, or any other unpleasant symptoms supervene, it will be more prudent to abstain from the bath, to open the bowels freely, and to see that the tongue is clean and an index of a favorable condition of the alimentary canal, and then to return again cautiously to the water. These *crises* are things not always to be recognised, and if mistaken for actual disagreement of the waters, may do incalculable mischief. I can say, at least, that I have never seen any decided case of such fever when the water was performing its appropriate function in the restoration of the invalid, and that I can assent to the *Bad-Sturm* only so far as to acknowledge that in gout and rheumatism, and in gun-shot wounds, and in perhaps many other conditions of the muscular tissue, an aggravation of pain may

precede a cure, and in affections of the glands and mucous membrane an increased secretion and discharge of morbid matter is indispensable.

As from the waters of Wildbad, so from the Warm Springs may relief be obtained in the following diseases: Chronic rheumatism and gout, and many diseases resulting from their latent existence; affections of the spinal marrow, and its consequences, paralysis, hemiplegia, following suppressed evacuations from haemorrhoids or uterine derangements, or metastasis of gout or rheumatism, or poisons—such as fumes of lead—may be relieved, but plethoric persons should be cautious in their use. Affections of the joints, lumbago, sciatica, contractions and morbid conditions of the bones, ought to be benefited.

The whole class of cutaneous diseases, such as herpes, chronic pemphigus, urticaria, acne, pityriasis, are the diseases in which much benefit might reasonably be expected from the water, and perhaps, more from this than any other, in consequence of the sulphuretted hydrogen it contains. Scrofula, and glandular affections generally, may be relieved, and in order to promote this result, it might be well to use at the same time the water internally, and to combine with it the water of the Alum Spring in the vicinity.

It does appear to me that a spirit of mutual accommodation on the part of these establishments

towards the visitors of each, may be made productive of great advantage to both. It is a beautiful and interesting drive over the Warm Spring mountain, and one or two omnibuses at a moderate charge, would be kept constantly in demand during the season. The suggestion is thrown out for what it is worth.

The counter-indications, or diseases not benefited but aggravated, are: Plethora, tendency to apoplexy, to haemorrhage of any kind, or inflammations of any of the internal organs, debility, catarrh of the kidneys or bladder, chronic diarrhoea, diabetes, internal abscess, phthisis, dropsies, scirrhous or cancer, biliary and urinary calculi, organic disease of the heart, varicose veins, hypochondriasis and hysteria, with debility, idiopathic epilepsy, chorea, monomania, insanity.

Women with the catamenia, or in a state of pregnancy, should be forbidden to bathe in this or any of the mineral baths of this region.

In closing my notice of the Warm Springs, it is gratifying to me to be able to bear testimony to the comfortable accommodation prepared for guests. It is limited, not being more than sufficient for about 130 persons; but, for its extent, it is fully equal to any other establishment in the mountains. The man would be indeed unreasonable, who would not be content with the fare and attendance at this place.

CHAPTER XVII.

HOT SPRINGS.

The Hot Springs, the property of Dr. Thomas Goode, are situated in Bath county, five miles west of the Warm Springs, at the intersection of two narrow valleys or gorges formed by the adjacent mountains.

There is nothing very remarkable in the natural scenery, and no attempt has been made to beautify it by art. It is, nevertheless, capable of great improvement. To appreciate this capacity it is necessary to see it from different points of view, an advantage that may be easily obtained by ascending the pretty hills that encompass it. The public road now runs through the valley and spoils it; but as all the land is owned by the same proprietor, it could be so changed as to obviate this unseemliness.

The accommodations for guests consist of a frame building, some 200 feet long, and two stories high. In this there is a neat parlor, dining-room, bar-room, and numerous chambers. It has a por-

tico running the whole length, which affords a pleasant promenade and place for lounging. Along the road are several cabins, some of wood, and others brick; and in the bottom of the valley, near the baths, are also several cabins of the same character. They are all very comfortable, the greatest drawback being their distance from the dining-room. The ascent from the baths and lower cabins, being about 40 feet, is trying to a lame or feeble person, and indeed there are many who should not encounter it, if it may possibly be avoided.

All the buildings here will accommodate about 120 persons with tolerable comfort, and I believe 140 have been taken in.

As regards the fare at the Hot Springs, I feel that I should not be doing justice, were I not to declare that it is excellent. No man, at his private table, can have finer bread; the pastry is also very fine; the milk is rich, the tea and coffee very good; the meats are good and well cooked; the table is neat; the knives and forks clean. In fine, economy and good management are very perceptible in all the household arrangements.

The visitors being for a great part invalids, there is but little gaiety; yet there are but few who complain of *ennui*.

The baths—six in number—are in a line extending from east to west about three hundred yards, and on the edge of a flat separated by a stream of

water from the still lower marshy ground in its rear.

The hot pool, or boiler, as it is usually termed, (106° Fahrenheit,) is the most easterly in the range. It is covered by a very large and badly contrived frame house, having a partition running longitudinally through it, which extends through the pool and forms separate baths and sweat-rooms for ladies and gentlemen. Next to this is a small cabin containing a foot-bath, *pro bono publico*—then the Ladies' Hot Spout Bath, (106° Fahrenheit,) into which runs a large *douche* through a bored log, with a fall of about $5\frac{1}{2}$ feet. Attached to this is a sort of ante-room and two or three dressing-rooms. Next comes the Gentlemen's Hot Spout, of equal temperature, and in every respect similar to the Ladies' Bath. Passing by a range of cabins, you next reach a hexagon or octagon building containing a very fine pool, which, however, is now kept closed, and the water conveyed by pipes into a lower building, into which it flows by two beautiful spouts, and at a temperature of 100° F.

Bathing in common, not being practised here, when the maximum company of the season is in attendance, there is some delay and difficulty in getting a bath at those hours usually preferred—from 11 A. M. to 2 P. M. Ladies and gentlemen have frequently to wait in the ante-room and take their turn. This is more especially the case at the

Hot Spouts, which are the baths in most demand. Nature has been, in an extraordinary degree, bountiful in the article of water at this place. Instead of six baths, with a proper arrangement, and very little more cost than has been expended on the present buildings, there might have been a range of bathing accommodation, extending from one extreme to the other, containing 50 baths of all temperatures from 54 to 106°—swimming, plunging, *douche*, shower—to suit the fancies or necessities of all.

It is really a pity that such advantages should be comparatively lost, when we consider the vast amount of good that might accrue to a very large class of invalids from the extension of boarding and bathing accommodations at this place. I feel perfectly satisfied, that if the Hot Springs were so improved as to take in 300 boarders, with all the appurtenances of comfort and convenience, it would average that number for three months—say from the 15th of June to the 15th of September.

Last summer I saw the foundation of a large swimming bath, 18 feet square, which I was told would be completed by the next season. It is intended, I understand, that the temperature shall be about 76°. Such a bath would be a great acquisition. At this place shower-baths may also be arranged with little additional cost. As the facilities for travel progress towards all those Springs, they

will attract more and more of public attention, and in a few years, where there are now hundreds, there will probably then be thousands.

On a former occasion, I took views relative to the Hot Springs similar to those now expressed. I was misunderstood by the proprietor, and looked upon as endorsing ill-natured charges against him. I had no such intention. My whole object in any allusion I made to his administration of his establishment, was, to bring into prominent view its capability of extension, and the benefits that would result to invalids from placing it in the best situation to promote their comfort and restoration to health. It gives me pleasure to have an opportunity of making this public disavowal of a purpose ascribed to me on the appearance of the second edition of my former work.

I have in my possession several letters furnished me by Dr. Goode, which he has at various times received from visitors and patients, all of which are couched in the kindest terms of gratitude for his attentions and skilful treatment. It is not deemed necessary to embody them in this book, and I only allude to the subject at all, because I have been mixed up with the idle gossip that has annoyed and perhaps temporarily injured that respectable gentleman.

I now pass on to the consideration of the virtues of the Hot Springs as curative agents, and I trust

that I shall be able to advance some views calculated to benefit those who may honor them with their consideration.

The following is the analysis as given by Professor Wm. B. Rogers:

Hot Springs.—The free gas in *boiler* contained in 100 cubic inches:

Nitrogen, 1.16; oxygen, 0.20; total, 7.40.*

There is also a trace of hydrogen in the water, but not a sufficient quantity to admit of determination.

The saline ingredients in 64 cubic inches are as follows:

Carbonate of lime,	-	-	4.82	grs.
Sulphate of lime,	-	-	1.52	
Sulphate of soda,	-	-	0.92	
Sulphate of magnesia,		-	0.57	
Muriate of soda,	-	-	0.37	
Silica,	-	-	0.05	
<hr/>				
Total,		-	8.25	

This analysis is by no means satisfactory, yet it is the best I can at this time command. Fortunately, however, we have the benefit of a long experience in the use of this water to guide us. The present proprietor—a respectable and skilful physician—has

* I confess I do not understand this, and suppose there is some error in the expression of it.

resided here about 20 years, in which time he has had unusual advantages in observing the agency of these waters in a vast number of cases. He has been industrious in noting many of the most important, and after having them duly certified by the patients, has published them in a little pamphlet, to be found at his establishment. I shall avail myself of some of them for the purpose of fortifying the opinions I express relative to the action of the waters.

If, as I had occasion to remark of the Warm Springs, a mineral water of a temperature of the human surface be a stimulant, so much more may this be looked for in a water of a temperature considerably above that point. We may then assume that such is the character of the Hot Springs, and that this is the principle on which it acts. If tranquilization subsequently occurs, as surely it will, if the experiment succeed, it will be because the organs involved have been restored to a normal function by the antecedent stimulation. Accordingly, we find that while these waters are useful in torpid conditions of the system, they are to be avoided in all forms of disease tending to the *acute*.

On the subjects connected with the use of thermal waters, there are many useful observations and suggestions in the works of Drs. Granville and Johnson, from whom I have already made extracts, and

in a book published by Dr. Peez, resident physician at Wiesbaden. The latter, indeed, is an enthusiast, and in some degree resembles the puffer of a quack nostrum; but we may gather many valuable hints from the bombast in which he involves his undoubted learning and experience. I shall not scruple, therefore, to avail myself of the labors of those gentlemen, giving them this general credit for whatever I extract from them.

It may serve to amuse the reader to give him a specimen of ridiculous transcendental jargon, which has also been noticed by Dr. Johnson.

In attempting to explain the action of the water, Peez says: "These and similar observations, many of which I shall mention in another place, constrain us to admit the existence of a *peculiar vital principle in mineral waters, communicating to that of the body either an attractive faculty more consonant with the medicinal component parts of the water, or acting by itself already as a healing power upon the diseased organism.* According to this hitherto hypothetically presumed presence of a *vital principle* in mineral waters, it may be comprehended how the chemical component parts, as they are called, (which, if mixed with common water, would be far less efficacious,) are the more readily assimilated, the more powerfully the tendency of nature to effect the removal of the cause of disease, is excited by that *vital principle*."

“ This enlivening principle, on the other hand, acquires, in return, by means of the mineral water and its component parts, the property of uniting with the organism. Thus it is evident why all mineral waters, when drunk, besides their individual effect, produce by means of their constituent principles, a *general* sanative effect, which is sufficiently proved by experience.

“ The partial effect of the medicinal component parts of mineral waters is pushed back, as it were, retreating under the ægis of a general power which directly excites the autocracy of the animated animal body, and *compels it to act according to the particular quality of the mineral spring determined by its component parts.*”

With better sense, and in more intelligible language, he remarks: “ As in the external world, all that is to exist develops itself from a liquid form, so must also the principle of nutrition be changed into it, in order to be rendered assimilable, and all substances become unfit for supporting life, must quit the state of rigidity, and return to liquid, before they can be drawn out of the region of organism. Thus water *evidently acts in many diseases as a sanative means*, and nature *avails* itself of it in many dispositions of the body in which the humors have a tendency to grow rigid and condense.

“ But how important soever the task may be that nature assigns to this element, we cannot attri-

bute to common water the powerful efficacy we discover in thermal waters. Experience has decided this long since, and taught us that it does not possess this healing power ; that it is insignificant, nay, even hurtful in many chronic diseases, whilst thermal waters only can effect a cure.

“ As for the choice of a proper degree of temperature of baths, its importance has been acknowledged long since ; but we cannot discover in it the principal cause of the efficacy of mineral baths ; for if the cure were to be attributed to it, journeys to bathing-places would be superfluous, because patients might at their own homes much more easily command the proper degree of temperature of their baths than in bathing-places.

“ But what does experience tell us of the value of a proper choice of temperature of baths in general ? It tells us, that baths heated to a proper degree are the most powerful means to produce equilibrium in the abnormally exalted or depressed activity of the nervous system in the different organs of the body ; that they check the immoderately accelerated circulation of blood, unless this circumstance should be owing to an acute inflammation, or some organic defect. But experience does not tell us that *common* tepid baths effect such great cures as we see by the use of thermal baths, frequently very deficient in component parts. It tells us, on the contrary, that natural mineral baths,

when used for some time, in many diseases, produce an excitation really critical, frequently raised to a febrile state, which, in most cases, is the precursor of speedy recovery.

"When patients begin to bathe, some individuals exhibit certain phenomena, which we must be acquainted with, if they are not to excite great uneasiness. Such are, propensity to sleep, giddiness, oppression of the chest, pain in the eyes, eruptions on the skin, weariness, vertigo, lowness of spirits.

"These phenomena may be prevented in some measure, and their duration shortened when they already have made their appearance, if, what should be a general rule, the patient use the precaution not to remain long in the first baths."

The best prevention will be, to take care that the alimentary canal is well evacuated by some proper mercurial combination and by injections of the warm mineral water. The latter is a means I here take occasion to recommend with earnestness as one of the most important adjuncts towards a cure. In almost every case in which the water is the proper remedy, this use of it is indicated.

This is well understood at the German Spas, and it is to be hoped that here also invalids will have all the benefits to be derived from it. But it may be as well to say, that they will generally have to depend on themselves for the necessary apparatus. The proprietor does not undertake to provide nurses,

nor the conveniences for nursing, and this it is well for the public to understand.

“The more encouraging symptoms are the following: After the first baths the organism is excited to form depositions upon the skin. The dry skin grows softer and moist, a prickling is felt on the surface of the body, a slight eruption ensues, attended with a sensible determination of hypochondria, hysteria or rheumatic suffering.

“The cutaneous transpiration is, in general, a little more encouraged. In some individuals the stools are retarded proportionably to the increase of the cutaneous or urinary secretions; sometimes, however, the functions of the skin and intestines are set free at the same time.

“Ulcers are by this cutaneous excitation made to discharge, for a short time, a greater quantity of matter; the ulcers of others become clean and granulating. Eruptions grow more violent before they are completely cured. Most tetterers secrete a greater quantity of lymph, and these phenomena are sometimes of longer and sometimes of shorter duration.

“Rheumatic and gouty pains are aggravated, stiffness increases, and walking becomes more difficult. These exacerbations generally last from four to ten days, and the strong and sanguineous are the most liable to them. It is often proper to deplete in such cases by cupping and purging, and the bathing should be discontinued until the excitement is removed.

"Even persons who never had suffered rheumatic pains, feel slight touches of that disease when taking the bath. These attacks were, however, invariable harbingers of a speedy and radical cure.

"The majority of bathers experience an increase of appetite; sleep grows profounder and more refreshing; many are overcome with a propensity to sleep after the bath, and this should not be resisted unless it is attended with headach, redness of the face, giddiness and a quick pulse—symptoms that require to be watched and counteracted."

At the Hot Springs, as at Wiesbaden, all the above symptoms and effects may be observed in the course of a season, and we may enumerate pretty much the same catalogues of diseases in which the waters of the former are useful or contra-indicated.

In the first class are, *complaints having their seat in the abdominal organs, and especially in the biliary apparatus*—indicated by acidity, eructations, furred tongue, troubled digestion, loss of appetite, sense of tightness or oppression about the stomach and bowels after food, costiveness or relaxed bowels, congestion about the liver, with or without enlargement of that organ, hypochondriasis and hysteria, haemorrhoids and their consequences, irritations about the kidneys and bladder, enlarged spleen, jaundice, sequences of residence in tropical climates.

The various forms of gout and their sequences.—The

baths, when assisted by the internal use of the waters, bring anomalous and latent gout into its proper place and form—into the extremities, thus relieving the interior.

Paralysis, general and local—the sequences of apoplectic attacks, or the consequences of metastasis of gout, rheumatism, or cutaneous eruptions from the surface to the brain or spine—also those paralytic affections occasioned by the poisons of lead, arsenic, mercury, &c., or contusions or other injuries of the head or back.

In the foregoing class of diseases, it will be often necessary to bleed, cup and leech, and give aperient medicine.

Scrofulous complaints, and all the cutaneous eruptions mentioned in connection with the Warm Springs.

Chronic rheumatism, with its various consequences.

The sequences of mercurial courses for various diseases, both in this country and between the tropics.

Several pulmonary complaints, occasioned by repressed gout, rheumatism or cutaneous eruptions. This class includes *chronic bronchitis*.

Uterine affections—simple amenorrhœa—chronic suppressed menstruation—neuralgic dysmenorrhœa.

Deafness from hardened or defective secretion from the membrane of the ear.

Want of power—from sprains, dislocations, &c.

Abnormal deposition of bone.

These and various other ailments are relieved at the Hot Springs.

The waters of the Hot Springs, like those of Wiesbaden, are contra-indicated in many cases. All *acute* diseases, that is diseases accompanied by fever or inflammation, are prohibited from these waters.

Whenever there is febrile action in the constitution, or local inflammation, however sub-acute, or even chronic, the use of thermal springs, either as drink or baths, but especially the baths, is dangerous. These waters, internal and external, will excite the circulation and nervous system (already too much exalted) into the most dangerous reactions, and lead to the most deplorable consequences.

Phthisical affections, except in the earliest stage, and before any material change has taken place in the lungs, preclude the idea of utility from these waters. Emaciation, from internal suppuration in any organ, and resembling phthisis, forbids the waters. The same may be said of cachectic habits, where the blood is broken down and the solids wasted.

Dropsy of the chest, abdomen or skin, will be prejudiced by these sources—and in short, all diseases connected with or dependent on defect of vital energy. Catarrhal affections of kidneys or bladder—*flor albus*—chlorosis—severe derangement of the digestive organs—*chronic diarrhœa*,

with emaciation, will derive no benefit from these waters.

All tendency to spitting of blood, menorrhagia, vicarious menstruation, stony concretions in the bladder or kidneys, scirrhus of the stomach or uterus, all organic affections of the heart or large vessels, idiopathic epilepsy, catalepsy, chorea, will be injured by these waters.

In chronic rheumatism and gout, these waters have a high and just reputation. In cases of long-standing gout of the atonic kind, these baths are usually successful, and in these cases it is well to combine with them the internal use of the water. The *douche* may be used with great advantage in dispersing local swellings, puffiness, or stiffness of the joints. In cases of erratic, irregular gout, these baths also promise well, and frequently bring the morbid action to one spot—a condition often induced previous to an amelioration.

It cannot be expected, however, that a single course of the waters will eradicate the disease. Persons afflicted with gout should return for two or three seasons, passing the winter in a mild climate, and being regular in their habits and abstemious in their diet.

In slight rheumatic cases a few weeks usually suffice. In the more intractable cases of articular and muscular rheumatism, as also in rheumatic affections of the face and head, a more persevering course will be required.

The state of abdominal plethora, with congestion of the liver, and obstruction in the circulation of the *rena portæ*, with its consequences, as impaired digestion, deficient or vitiated biliary secretion, piles, &c., occurring for the most part in persons about the middle period of life, and marked by protuberance of the abdomen, with diminished muscular and nervous energy, is one calculated to be relieved by the use of the water internally and externally employed. Even when the drinking of the water is not followed by immediate sensible effects, either upon the bowels or kidneys, it is frequently not the less efficient on that account; and unless some inconvenience be experienced, it should be persisted in, as after a certain time copious critical evacuations will often occur, and be followed by immediate relief.

In several of these cases, especially when there exists hardness or tension in the region of the liver, spleen, or in other parts of the abdomen, the *douche* will be of material assistance in the treatment.

In many cases of *paralysis* the Hot Springs offer efficient means of arousing the nervous energy of the system, especially when the complaint is of a rheumatic origin, depending upon the impression of poisonous influences—as malaria, the abuse of mercury, or the employment of this, lead, or some other metals by workmen; as also in cases where the disease appears to be local, not connected with

cerebral disease, but arising from deficient energy of the nerves of the part or the spinal marrow, consequent upon exposure to cold, wet, or other analogous causes.

In conclusion, I give several selected cases, for the purpose of establishing the facts which I have stated relative to these waters. Persons desirous of examining them more in detail, are referred to the little pamphlet of Dr. Goode, already mentioned.

CHAPTER XVIII.

The following interesting letter, addressed to Dr. Goode, will be found to coincide with my views of the important agency of the Hot Springs in dysmenorrhagia, or painful menstruation. Dr. Howard was formerly professor of midwifery and the diseases of women and children in the University of Maryland, and is now professor in the medical department of the University of Virginia :

“UNIVERSITY OF VA., Dec. 10, 1841.

“Dr. Thomas Goode.

“DEAR SIR,

“I have just received your letter of the 17th inst., soliciting my opinion and experience of the remedial effects of the Hot Springs in *chronic diarrhœa* and *difficult menstruation*.

“In reply to your enquiry, I may state that for many years, but most particularly for the last ten, I have advised all my patients, who were afflicted with chronic diarrhœa or painful menstruation, that resisted medical treatment, to avail themselves of the

medical powers of the Hot Springs; and I do not now recollect of an instance, when the proper *preparatory measures* and *indispensable auxiliary regimen* to the use of the baths were strictly observed and persevered in, in which my expectations of the efficacy of the waters were disappointed.

“It is true that a few cases have occurred in which the patient returned to me without receiving relief, and some have claimed my attention in which the diseases appeared aggravated; but in all these cases it was ascertained, that either the preparatory measures *necessary* to be *adopted previous* to taking the baths, or the *auxiliary regimen* to be used *simultaneously* with bathing, were not rigidly adhered to.

“I feel constrained by the result of my observation and experience during my visit to the Hot Springs, to state, that I believe that those waters are so potent for *injury* as well as benefit to those afflicted with chronic diarrhoea or painful menstruation, that none such should use them without the advice of a physician *conversant* with their qualities. And physicians, when recommending this watering-place to their patients, should make them aware, that travelling and its incidents sometimes convert chronic into acute affections, and that a regimen and course of treatment, very proper in the former state, may be highly improper in the latter condition.

“I am, respectfully, yours,

“H. HOWARD, M. D.”

The following memorandum was made of the treatment of a case of chronic rheumatism at the Hot Springs in 1849 :

August 3d. B. arrived at 10 A. M., excited by travel from Richmond, and in a constipated condition. At night, took 8 grains blue mass, which acted energetically next morning.

4th. Took spout bath at 100° Fah't, remained in 15 minutes, returned to his room, lay down and found pulse 104, face flushed and nerves greatly excited. Night, took 4 grains blue mass.

5th. Morning, a teaspoonful of Henry's magnesia, by which the bowels were freely evacuated. Noon, took *boiler*, pulse on entering 80; immersed 15 minutes, went into blankets, pulse 104; remained 45 minutes, at the expiration of which time pulse was still 104, face very much flushed, but nerves not so much excited as by the bath of 100°. This may have been owing to the brisk purgation caused by the blue mass, magnesia, and three glasses of Hot water, one taken in the bath, the other two in the blankets.

6th. In the morning took a glass of the Hot water and a short walk, pulse 83, the tongue was somewhat furred; after breakfast a copious evacuation; took *boiler* at 11 A. M., immersed 15 minutes; glass of water in the bath; immersed the head to-day; remained in the blankets one hour; after 15 minutes pulse was 100; at the close of the hour 106;

sweat not remarkable, but face did not flush as on yesterday; bowels again acted on, with some distress at the rectum; feels altogether more comfortable than the day previous; at night, takes blue mass, 4 grains.

7th. Morning, glass of warm water, followed by free evacuations; 12 o'clock, pulse 76, takes *boiler*, immersed 15 minutes, pulse on coming out 102; remains in blankets one hour, at which time pulse 80; a good deal enfeebled after the blankets, though the sweating was not profuse.

8th. Morning, action on the bowels continues; takes spout 100°, and directs the *douche* on the affected parts; a soreness is diffused through the limbs that makes locomotion more difficult; takes no Hot water to-day; the tongue slimy. Night, no medicine.

9th. Morning, takes spout 106° for 15 minutes; feelings pleasant, but pulse not counted; action on the bowels ceased. Night, sick stomach; takes blue mass, 3 grains.

10th. Morning, bath 106°; no movement of the bowels; tongue furred. 12 M., pulse 73; no impression made on the rheumatic pains. 6 P. M., this day, by way of experiment, took spout 106°.

11th. 6 A. M., takes spout 106°; pain and stiffness greater, and face flushed; pulse 110°.

Here the memorandum is discontinued, but the progress of the case up to the 21st day was pretty

much as stated, the pulse being uniformly excited, the face flushed, and the power of locomotion diminished. After three weeks, the patient being disheartened, left the water.

This was a case of four years' continuance, and a remarkable one. The weight of the disease seemed to have fallen on the abductor muscles of the thighs up to this time, when it appeared to extend into the hips and knee joints. There has been no shrinking of the muscles, no apparent effusion, but continuous and intense pain; occasionally, however, more aggravated. The general health is usually good. Before he visited the Hot Springs in 1849, he had an attack of cholera, which deranged the functions of the liver; and this may have been one cause of the failure of the water to afford relief.

The writer is now impressed with the belief that he was too precipitate in leaving the water, or, at least, imprudent in not returning to it after using the sulphur waters. He intends giving it another and more persevering trial, and still has confidence in obtaining relief at the Hot Springs.

The author made a memorandum of the following case at the Hot Springs in August 1849:

Case of Mr. Newsom of South Carolina.

Mr. N. was afflicted with indurated and engorged liver and enlarged spleen, and of course dyspeptic.

He spent at the White Sulphur some nine days, during the last four of which he represents himself as greatly benefited, there having been a decided impression made on his liver.

When he came to the Hot Springs he put himself under advice of Dr. Goode, who gave him, after one bath at night, four pills, composed of calomel, blue mass and rhubarb, each one grain. Next day, taking the spout-bath and directing the stream over the liver, he felt as he describes it, "a *giving way* as if the abdomen was caving in." This was followed by most copious discharges of bilious fæces after bath, and clots of matter streaked with blood. He felt immediate relief, and on the 10th day is leaving the Hot in comparatively good health.

Cases furnished by Dr. Goode, shewing the benefits arising from the use of the Hot Springs in various chronic affections.

NOTTOWAY COUNTY, Dec. 18, 1839.

DEAR SIR,

In July 1838 I was violently attacked with what is commonly called the bilious colic, (whether from the passing of calculi, or a deranged state of the secretions of the liver, I am unable to say,) followed by an ardent fever, terminating on the 9th day in a well-marked case of jaundice, with dyspeptic symptoms and great debility.

As soon as I was able to travel, I set off for the White Sulphur Springs in a carriage, and was again attacked on the day of my arrival with violent pains and spasms in the region of the stomach and liver, followed by fever and an increase of all the above-mentioned symptoms. As soon as it was thought prudent, I commenced the use of the White Sulphur water, in combination with the blue mass or calomel and the most approved vegetable extracts. The water, so far from relieving, evidently aggravated my disease, proving highly exciting, and not in the slightest degree affecting the biliary secretions. I used the White Sulphur water 18 days, and not receiving any benefit, I determined to try the Hot Springs.

On my arrival there I was greatly debilitated and in much pain—commenced the use of the bath that evening, and so great was the sensibility of the liver and whole abdominal region, that I could not for a moment suffer the spout-bath to fall on it. I used the spout-bath with evident benefit for five days, and on the sixth went into the *boiler* or sweat bath. The first sweat seemed to unlock the liver as if by magic, causing free discharges of bile ; and from that day all the functions of that organ appeared to be perfectly healthy and regular. I daily gained flesh and strength, and returned in the latter part of September, nearly restored to health.

In December following I was again attacked with all my old symptoms, if possible in a more violent

degree, (produced by exposure to a snow-storm,) which nearly proved fatal. I was confined to my bed all the winter, and did not leave my house till late in March. My recovery was slow and imperfect, and in August 1839 I determined to try the Hot Springs again. On my arrival my health was very bad—symptoms nearly as in 1838, my bowels nearly insensible to the most drastic cathartics. I was not disappointed in my hopes from the use of the baths, but realized my most sanguine expectations. After using the spout and sweat bath alternately for eighteen or twenty days, finding my health greatly improved, I went to the White Sulphur, and found the water to agree admirably with me, experiencing none of the injurious effects this season which it evidently produced in 1838.

Since my return home I have continued to enjoy good health, and have no hesitation in saying, I owe it all, under kind Providence, to the Hot Springs. I have purposely delayed sending this communication at an earlier day, that there should be no mistake from any temporary benefit derived from the use of the baths. My experience warrants me in saying that the use of the Hot Springs bath is the very best preparation of the system for the safe and beneficial use of the Sulphur Waters of Virginia.

Yours, respectfully,

A. A. CAMPBELL, *M. D.*

Dr. THOMAS GOODE.

HOT SPRINGS, August 18, 1838.

In September 1835, I was taken with a bilious intermitting fever, which continued at intervals, in spite of remedies, until May 1836, when my liver and spleen became much enlarged, my appearance was bloated and dropsical, and my whole system deranged. I had a craving for food of the grossest kind, which could not be satisfied, and my bowels were so costive as to require the strongest purgatives to move them. I applied to our most skilful physicians for advice. I was leeched, cupped, blistered and salivated: took much medicine internally, but without benefit. I also tried the Saratoga Springs, but without effect. I continued the use of medicines until the 26th of June 1838; I then visited the White Sulphur Springs, and used the waters, with the blue pill, for two weeks, but without the least benefit—they acted freely on my kidneys, and produced a white, mucous discharge from my bowels, but no bile. I then came to the Hot Springs, and after bathing for three days, my liver began to discharge itself into my bowels, followed by copious evacuations, by puking and purging, of ill-looking bilious matter, which sickened me very much, when I called in Dr. Goode, by whose advice I have since been governed.

The bath and medicine have reduced my liver almost entirely—the enlargement is barely perceptible. My spleen is diminished about one-third, and

is much softened. The discharges from my bowels are nearly natural. My health is fast improving, and I know that I ought not to leave the place, but hope, with common prudence on my part, to become again a healthy man.

The above statement is most freely made for the benefit of those who are suffering in the same way.

MORGAN A. PRICE.

HOT SPRINGS, August 13, 1842.

About four years ago my liver became diseased, dyspeptic symptoms came on, with a diarrhoea, which continued for eight months, and in spite of the best medical aid, prostrated my whole system and destroyed my health completely, terminating in a fixed enlargement of my liver and spleen—my colon also was greatly distended and felt hard. My physicians thought it indurated and incurably diseased. My sufferings were constant, and oftentimes severe.

Deriving no benefit from medicine, I was induced to visit the Virginia Springs. I used the White Sulphur water twenty-five days with some benefit. It caused moderate discharges of bile from my bowels, but did not reduce the size of the liver, spleen, nor intestine. I then came to the Hot Springs, and by your directions commenced the use of the spout bath, temp. 100°. About five hours after taking the first bath, I felt a contraction

in the region of my liver, with pain like the twisting of a cork-screw in the direction of my intestines, which soon extended to the lower bowels, followed by several copious evacuations, (not less than two quarts,) resembling tar in color and consistence, and producing great heat and pain as it passed off. In a short time I felt much relieved. The next day I took the same bath, which was followed by some pain and several moderate, dark discharges. For the next three days no sensible effect was produced by the bath. You then directed me to the spout, temp. 102, which was followed by pain and copious discharges, of color not so dark as the former. From this time to the sixth day, I have experienced daily amendment. My liver, spleen and colon, so far as I can ascertain, are all reduced to their natural size. I suffer no uneasiness whatever, but feel perfectly restored in all respects. I have used the baths for three weeks only.

My residence is at Point Coupee, State of Louisiana.

M. FOUNOIR,

To DR. GOODE, *Hot Springs.*

BEACH HILL, 6th October 1835.

DEAR SIR,

I have received your letter of the 10th September, asking the particulars of my disease, together with the benefit I derived from the use of

the waters of the Virginia Springs two years ago. I had been a confirmed dyspeptic for near five years, with symptoms of the most distressing character ; my bowels in a state of obstinate costiveness—medicine making but little impression on them. I applied for aid to many of the most celebrated physicians, but got no relief. I then determined, as a last resort, to try the Virginia Springs.

I attended the Sweet Springs, the White Sulphur and Salt Sulphur, and the Hot Springs. From the three former I derived no benefit whatever; but the benefit which I did receive was from the spout bath at the Hot Springs, which I believe saved my life. On the third night I was waked up by a severe griping, which was followed during the remainder of the night by repeated and copious discharges of vitiated and acrid bile. The next morning I was greatly better, and afterwards improved rapidly. I remained only eight days, and gained eleven pounds in weight. I went by your direction and took no medicine.

I am, very respectfully, yours,

CHARLES HAMLIN.

To DR. GOODE, *Hot Springs.*

CHARLOTTESVILLE, Nov. 10th, 1842.

MY DEAR SIR,

At the request of Mrs. Kelly, I furnish you with a brief statement of her case.

Mrs. Kelly, about eighteen months anterior to the summer of 1815, was attacked with unequivocal and decided hepatitis: First, in its usual form, with all its peculiar and characteristic symptoms, resisting the most active and vigorous medical agents that could be adopted—the disease gradually progressing into the chronic form, with enlarged liver, jaundice, diarrhœa, &c. In this stage the appropriate remedies were perseveringly used, still without relief, until the season approached for a trial of the mineral waters. At this period such was her debility, emaciation and prostration, that her friends despaired of her reaching the Springs. The effort, however, was made; and she arrived at the White Sulphur, where she remained six weeks, using the water without improvement in her complexion, or any favorable impression on the disease. She was now transferred to the Hot Springs, where she remained one month, assiduously employing the boiler and spout baths, and under their use she became completely relieved, the jaundiced state of the skin disappearing, also the enlarged condition of the liver, with an almost entire exemption of any serious recurrence of the disease from that period to the present time.

Very respectfully,

CHAS. CARTER, *M. D.*

To DR. GOODE, *Hot Springs.*

Dr. Goode.

DEAR SIR,

A long indisposition from the effects of a deranged state of my liver led me to try the Hot spout bath at your Springs. I had previously remained four or five weeks at the White Sulphur, from which I had derived much advantage, but not so much as to make me believe that I could not be further benefited by the use of the Hot Baths. Its effect upon me was immediate, and as powerful as I had been led to suppose, producing a free action on the liver. I continued to use them eight or nine days with equally happy effects. Entertaining as I do, the highest opinion of the efficacy of the Hot Springs in all cases of a diseased liver, I am led to give you this simple statement for the benefit of others as much in need of them as myself.

Very respectfully,

Your obedient servant,

JOHN L. MANNING,

Of South Carolina.

HOT SPRINGS, Sept. 20, 1838.

Dr. Thomas Goode.

SIR,

For nearly three years I have been subject to very frequent attacks of jaundice, but more particularly during the year 1838, when my liver be-

came torpid, and refused to perform its functions—the biliary duct seemed to be closed—my bowels became much disordered, and I had a confirmed diarrhoea. I became very weak from the effects of medicine, and was unfit for business or society.

By the advice of my physicians I left Philadelphia on the 27th of June for the Virginia Springs, and reached the Hot Springs early in July, much exhausted. I used the spout bath for three days, and on the fourth I took the sweat bath, which reduced the number of discharges from my bowels to one a day, and I felt better. I continued the sweat bath for near three weeks, and my health appeared to improve from every bath. My appetite and strength increased rapidly, and my complexion, which was very sallow, became clear and healthy. I then went to the White Sulphur for two weeks, taking from eight to ten glasses of water daily, with evident benefit. I returned then to the Hot Springs, and took the sweat bath nearly every day for two weeks, with half a wine glass of a mixture of the extract of taraxacum, when I found my health restored. I gained twenty-four pounds in flesh.

Yours, respectfully,

DR. KIRKPATRICK,
Of Philadelphia.

During the summer of 1837 I was attacked with violent pains in the region of the stomach and liver,

proceeding, as was afterwards ascertained, from calculi in the biliary duct. At a succeeding period I discharged several of these calculi, which, together with other facts, clearly indicated the seat and nature of my disease. It was said by my physicians that mine was a case in which there was great doubt of a final recovery, owing to the frequency and violence of the attack. Each attack was attended with the usual symptoms, and jaundice invariably supervened.

I visited the White Sulphur Springs in August 1828, and was much improved—so much so as to suppose at the time that I was entirely relieved. On my return home, however, the attacks returned with the same violence, but not so frequently. I re-visited the White Sulphur in 1829, with the same good effect as to my general health as in 1828. The disease still continuing, I visited the White Sulphur again in 1830, with the same results as to my general health, and after remaining there about three weeks, I went to the Hot Springs, and used for eight or ten days the spout bath, and have never had a similar attack since. I believe myself entirely free from the disease under which I then labored, by close attention to my general health, the use of the water at the White Sulphur, and the spout bath at the Hot Springs.

J. L. WILKINS, JR.,
Of Brunswick County.

In the summer of 1836 I visited the Virginia Springs with liver disease, as stated by many physicians. I used the sulphur waters for some time, but without any decided effect. I then came to the Hot Springs, and after using the spout bath a few days the pain in my right side increased from a dull to an acute, which induced me to apply to Dr. Goode for advice. He gave me ten grains of calomel, which brought about a most happy change in my feelings and health, producing copious discharges of dark bilious matter, when forty grains often before taken produced but a limited effect. From the Hot Springs I returned to the White Sulphur, and the water then acted freely on my bowels.

JAMES L. COLEMAN,
Of Georgia.

Hot Springs, Aug. 14th, 1837.

In 1826 I had a protracted attack of bilious fever, which left me in a bad condition. My stomach being much disordered, accompanied with great flatulency, gave me from four to six passages every twenty-four hours, and sometimes oftener; my stools mixed with blood, more or less, and sometimes with matter very offensive. At length a tumor formed in the lower intestine, about the size of a small walnut, attended with great heat and itching, which ultimately broke, and I occasionally discharged considerable quantities of blood and matter by

stool. I then thought, and still think, that the whole rectum was much diseased, and that I should be compelled to submit to an operation, or fall a victim to the disease.

In addition to my sufferings, in the fall of 1831 I had a severe rheumatic attack, which pervaded my whole muscular system, but was most distressing about my breast, chest, bowels and hips. In this situation, about the 1st of July following, I went to the Hot Springs, barely able to sit up, and used the waters freely, drinking and bathing until the 30th of August, when I left them much relieved in every way. The ensuing summer I again returned to the Hot Springs, and used the waters by drinking and bathing, until the last of August, when I returned home entirely relieved of bowel disease, and nearly so of my rheumatism. I have again this summer visited these Springs, where I have been for three weeks, using the waters as before, and believe myself entirely relieved of all my complaints, except a little stiffness in my hips and back.

The above statement is believed to be strictly correct; and if you think it will be of any service to you, or to sufferers in a similar situation, you may make any use of it that you may think proper.

Very respectfully, yours,

HENRY CALLOWAY.

Aug. 30, 1834.

To DR. GOODE.

APRIL 1833.

I was seized with cholera in a southern climate, from which I had scarcely recovered when intermittent fever attacked me. This continued at intervals until September, when congestive fever supervened, and continued with much violence for the space of nine days, and only subsided to give place to the intermittent again. From this time a morbid appetite began to prey upon me. The ague alternated with a severe dysentery until March 1834, œdematosus swellings of the lower extremities made their appearance, but gave way to the use of alternatives and muriated tincture of iron. I became much emaciated and debilitated; my spleen became much enlarged; an excessively morbid condition of the stomach continued, an ungovernable craving for food of the grossest description and other indigestible substances. In the mean time an uncontrollable diarrhoea, which has given me more uneasiness than every other symptom, came on. During nearly three years, every article of diet swallowed would ferment, produce the most distressing cardialgia, and run off from the bowels by profuse watery evacuations. The spleen in the left side and swelling of the stomach and intestines was great and painful. The irritability of the alimentary was so great, that the smallest portions of calomel or blue pill, combined with opiates, would

produce an hypercatharsis, sometimes almost fatal ; neither food nor medicine agreed with me.

In this state of almost despair, I visited the White Sulphur Springs, and finding that the water disagreed with me, inasmuch as it proved too drastic, I determined to visit the Hot Springs. In a few hours after using the bath, I had a bilious discharge, which had not occurred for eight months. In four days time, my diarrhoea ceased, and my evacuations became almost healthy in complexion. I had been very much annoyed by haemorrhoids for fifteen months, which was relieved by the spout bath in three days. The improvement in my complexion was so great that the visitors would remark, "Why, Doctor, you will soon be well." My spleen was reduced about one-half, the abdominal muscles became relaxed and soft, my strength and activity very much improved, and every symptom seemed to give way to the use of the bath.

A. Y. WATSON, *M. D.*

HOT SPRINGS, Sept. 10th, 1837.

SIR,

More than three years since I was taken with a severe dysentery, which was succeeded by what I should term a mucous diarrhoea. Since that time I have suffered an annual return of the dysentery each summer until the present—this year I have escaped this periodical attack by passing my time in the mountains.

I remained a week at the White Sulphur without the slightest benefit, when I directed my course to the Red Sulphur, where I remained five weeks. My general health was greatly improved at this place, and at first I was cheered with hopes of a recovery, but I left the Red Sulphur with the diarrhoea in full force on me, and without the slightest diminution of the mucous discharge, although the bilious secretions were slightly improved. In that state, a state of unabated diarrhoea, I reached the Hot Springs seven days ago, and was persuaded to use the spout bath. I applied the spout principally to the region of my liver, and to my back—wonderful to relate, I felt instantaneous and perfect relief—the mucous discharge entirely ceased, which had not occurred previously in the whole course of my disease. Since the first day I have felt no pain or uneasiness in the bowels, whereas before I was tortured night and day. So well do I feel, that I shall start for home to-morrow in fine spirits, and only regret that I had not sooner tried your Hot Springs. This is a short and rapid sketch of my case, but I assure you it is a faithful one. I shall make no commentary, but will simply say, that I consider my cure entirely and solely owing to the Hot spout.

ROBERT J. BRENT,
Of Washington, D. C.

To DR. GOODE.

HOT SPRINGS, August 1837.

To Dr. Goode.

DEAR SIR,

I give you the following statement of my case: About ten years ago I became dyspeptic, and was unwell in the usual way, when at length I became much worse; almost everything taken in the stomach produced pain, and frequently violent spasms, which threatened death. I experienced no relief when under the influence of calomel; tiring of which, after suffering for about two years, I determined to try the sulphur waters.

I commenced at the White Sulphur, but the water disagreed with me, and I then went to the Salt Sulphur, understanding that the water was more purgative; for you must know that my bowels were invariably constipated. After using the water for two days, I had a violent attack of spasm, which was relieved by a hot bath. I then came immediately to the Hot Springs; my stomach was so much debilitated, that I was compelled to live exclusively on milk and mush, and the like bland food. The first meal I took at the Hot Springs was milk and mush, which brought on pain, threatening spasm. I went immediately into the spout bath, and from that day to this I have been entirely exempt from the disease.

I bathed every day, sometimes twice, and in a

few days I was enabled to eat everything at the table, including desserts of all kinds.

WILLIAMS CARTER,
Of Hanover.

HOT SPRINGS, August 28th, 1849.

Dr. Goode.

DEAR SIR,

Believing that a knowledge of it may be useful to others suffering in the same way, I furnish you the case of the Rev. D. C. Wharton, as stated to me by himself in 1845. I do this the more readily, as his demise since prevents a statement under his own hand.

He was suffering from a torpid and gorged liver, attended with dyspepsia, obstinate costiveness and great debility. He visited the Sulphur Springs, but without any material benefit. His appearance was improved and his complexion changed; but there was no evident action on the liver. At my urgent solicitation he visited the Hot Springs, and the first bath he took produced copious discharges of vitiated bile, both by vomiting and purging, attended with much sickness at stomach and general prostration of strength. This alarmed him so much that he could not be prevailed on to take another bath, but left the Springs the next day.

The disease of which Mr. Wharton subsequently

died, was, I believe, a malignant type of fever, prevailing at the time as an epidemic in the section of Campbell county constituting the field of his ministerial labor.

Yours truly,

DAVID CALDWELL.

Paralysis.

RICHMOND, Sept. 24th, 1842.

Dr. Thomas Goode.

DEAR SIR,

Having used your baths with such decided benefit, I deem it proper that I should give a statement of my case, which I will do as briefly as possible. In March 1833 I had a most violent attack of paralysis, which destroyed the use of the whole of my left side, and with it brought on a state of general debility, which entirely disabled me from attending to business. In this situation I left home for the mountains, hoping to regain my health by travelling and the use of the different mineral waters; but after spending nearly four months in going from Spring to Spring, I had to return home but very little benefited in my lame side, although my general health had improved a good deal, which was some little encouragement to me to make another trial; and when the next summer

(1834,) opened, I again started for the White Sulphur, and remained there one month, and then went to the Sweet Springs, and remained two weeks or more, and again returned to the White Sulphur, where I remained some time; but finding little or no improvement in my lameness, I determined to try the Hot Springs baths, although it was against the advice of physician and friends, and left for that place, not knowing what would be the consequence of my seeming rash determination; but when I saw you and received your assurance that there was no danger in my using the baths, I was encouraged, and commenced bathing without delay, and found that it suited my case exactly; for the effect was at once visible in the rapid improvement of my lameness, and the better condition of my general health; and I returned home cheered with my much improved health, and commenced a business of much labor and activity, which I have followed down to the present time, (eight years,) with little or no interruption from my old disease.

Very respectfully,

Your obedient servant,

SAML. HARDGROVE.

Deafness.

STEUBENVILLE, Nov. 20th, 1838.

DEAR SIR,

Annexed is a concise statement of my case. For several years my health had been bad. I had suffered much from a rheumatic affection of the muscles of my back, which was always severe in cold weather, and induced me to spend some winters past in New Orleans. About three years ago, after an unusual exposure, I felt that my disease was transferred to my head. A dizziness, approaching to blindness, came on, and at times I suffered an indescribable sense of weight or heaviness on the brain, and almost wholly lost my hearing in one year. These unpleasant complaints continually increased. In the mean time I followed rigidly the advice of physicians. I lived abstemiously, was frequently bled and cupped, and had cold water and ice applied to my head, which produced only temporary relief. At one time I used the blue pill until my gums became tender, and felt decidedly better under its influence; but the disease still remained, depressing my spirits, and impairing all the enjoyments of life. At two different times the distress in my head was so great as almost to deprive me of consciousness, until I was bled.

Early last summer all these symptoms had assumed a more fixed and threatening character than at any former period, when I determined to visit the Virginia Hot Springs, where I arrived in August. I used the waters in the customary way, permitting the spout to fall directly on the ear of which I had lost the hearing, and over the head generally. I experienced immediate good effect; and before I left the Hot Springs, where I remained about three weeks, recovered my hearing entirely, and also felt perfect relief in my head. This relief has continued up to this time. I find no inconvenience whatever to follow the use of my ordinary diet, and can truly say, that I have not felt so entirely in good health for many years.

Very respectfully,

Your obedient servant,

MARTIN ANDREWS.

HOT SPRINGS, September 18th, 1840.

DEAR SIR,

At your request, I give you a statement of my case. In February last I was taken with a violent cold in the head, which left me almost entirely deaf in my left ear. I came to the Hot Springs on the 18th of July, and after using the baths freely for about two weeks, my hearing

was restored, and has continued perfect without interruption up to this date.

JOHN B. CUTTING,

Lieutenant U. S. N.

To DR. GOODE.

Rheumatism.

HOT SPRINGS, Aug. 8th, 1838.

To T. Goode.

DEAR SIR,

I give you a short statement of my case. In 1826 or '7 I experienced a severe attack of bilious fever, which reduced me very low. I was scarce able to leave my bed, when the fever was succeeded by a violent attack of inflammatory rheumatism, from which I recovered in about two months. In February 1835, after a slight bilious attack, the rheumatism returned in a chronic form, and reduced me to a state of helplessness. All hope of recovery was deemed idle, my constitution being very weak. I left home for the White Sulphur in June following, remained there two weeks, and left with a severe cold that augmented my disease.

I remained here near or quite a month, taking the spout and boiler baths alternately, and entirely re-

covered. I have not had the slightest return of the disease since.

Yours, &c.,

WM. M. DARLINGTON,

Of Petersburg.

HOT SPRINGS, 29th Aug. 1833.

In the month of January 1806, during my attendance on the Virginia legislature, of which I was then a member, I was very sorely afflicted with an attack of inflammatory rheumatism, and about the 1st of July in the same year, after the disease had assumed a chronic state, I arrived at the Hot Springs in Virginia, much debilitated, requiring two persons to put me in and take me out of a carriage. I remained at the Springs sixty-three days, using the bath once every day except three. I was weighed the day I got to the Springs, and also on the day I left them, and, if I was correctly weighed, I gained sixty pounds in weight in sixty-three days, and remained free from that complaint for upwards of twenty years.

H. CALLOWAY,

Of Franklin Co.

PHILADELPHIA, 23d February 1834.

In the year 1826 I contracted a very bad cold, by sitting for several months in a room which had been recently plastered upon very thin walls. The

cold at first fell upon my breast, and was attended with a cough. After some time the cough subsided, and I was seized suddenly with a pain in the right arm. In a few days the pain became very violent ; it was seated principally in the shoulder-blade, but extended likewise from the shoulder down to the points of the fingers. The best medical aid was resorted to, but there was no alleviation from the pain, not even for a minute. In this situation I got little or no sleep ; the agony was so much increased by lying in bed, that the only rest obtained was by lying, with my clothes on, across the foot of the bed, with the affected arm hanging down. In this situation exhausted nature would sink into a doze, out of which I was soon awakened by the pain. The arm dwindled away, my appetite failed, and my general health was fast declining.

Reduced to this state, I determined to try the Hot Springs in Virginia. With difficulty I was taken there, and had no reason to repent of my determination. I took forty hot baths, using the blankets each time. At the end of two months I returned home so much altered in appearance that I was the object of astonishment to those who had seen me previous to my departure, and in another month I was perfectly restored to health.

P. A. BROWN.

To DR. GOODE,

Hot Springs, Bath Co., Va.

Old Injuries.

In 1837, after spending three weeks at the White Sulphur and other Sulphur Springs, where I drank the waters, I visited the Hot Springs, and there took regularly two spout baths a day, from the 8th to the 18th of September, inclusive. My object was to get rid of a rheumatic pain above the right hip, occasioned by a fall the year previous. The second spout removed the pain from the hip to the shoulder, and the succeeding ones made it travel still more over my back; thus I suffered more that week than I ever had done before, but at the end of ten days I left the Springs entirely free from pain. The second and third spouts produced likewise a most extraordinary effect on the liver—a copious yellow evacuation, such as I never witnessed in my life.

In 1838 I spent a week at the spout in order to see whether it would produce the same discharge, but it had no longer the same effect.

H. DAVRAINVILLE
Of Philadelphia.

Hot Springs, Sept. 1st, 1838.

SOUTHAMPTON, 15th Feb. 1843.

DEAR SIR,

Having derived the most important benefit from the use of the spout bath at the Hot

Springs, it gives me pleasure to comply with your request, and bear testimony to its virtues.

In the month of August 1829 a horse ran away with me in a gig—I leaped out, fractured the small bone in my leg, and injured the patella or knee-pan most severely. A tedious confinement was the consequence. When I was sufficiently recovered to leave my bed, I found the leg so contracted that I could not walk without the aid of crutches. Indeed, when standing erect, my foot did not reach the ground by four inches. The limb shrunk from inaction; and fearing I should be a cripple for life, I visited Philadelphia and consulted Dr. Physic. He told me my case was hopeless, and surgical aid would be of no avail. I returned home, and went to the Hot Springs. I had then been on crutches more than twelve months—my left leg was not half the size of the right, and so contracted that I could not get the foot to the ground. The very first bath relaxed the contraction—my leg became straight, and I walked back to my cabin without crutches. I used the bath once a day for about three weeks. The limb was gradually restored, and I have never used crutches since. I regard myself indebted to the Hot Springs for my leg.

I am, most respectfully,

Your ob't serv't and friend,

J. Y. MASON.

Loss of Voice.

HOT SPRINGS, 19th Sept. 1836.

To Dr. Goode.

In the year 1826 I was taken with a violent cold, which deprived me of the power of uttering a word above a whisper. The tonsils, epiglottis and the windpipe were considerably inflamed and swollen, especially in cold, damp weather. In 1827 I visited the Red, Salt and White Sulphur Springs, which improved my *general* health. In 1828 I came to the Hot Springs and took forty-two sweat baths in succession, and occasionally the spout. My general health was greatly improved, and my voice so much strengthened as to enable me to converse in the ordinary tone of common conversation. I remained at the Hot Springs fifty-seven days, and gained twenty-two pounds in weight. I used no animal food whilst bathing.

I am, very respectfully,

W. FOUNTAIN,
Of Fluvanna County, Va.

Neuralgia.

HOT SPRINGS, 27th Aug. 1844.

Dr. Goode.

For several years anterior to 1843 I had been most severely afflicted by acute neuralgia, particularly in my right side, from the arm-pit to the hip bone. The paroxysms were so severe that my system, in spite of all the remedies I could obtain, was reduced to great debility and emaciation, and consequent mental depression.

I had visited Saratoga Springs twice, and some other watering-places, without any permanent benefit. In the summer of 1843 I determined to try the Virginia Springs. After about a month spent in using the White and other Sulphur waters, I repaired to the Hot Springs, and after using the spout bath and boiler for two weeks every day, and sometimes twice a day, I was, to my great surprise and gratification, *wholly relieved*. For twelve months past I have had but one slight paroxysm. Under Providence, I may therefore confidently ascribe my restoration to the Hot Springs.

As the disease abated, my appetite, flesh and strength increased, and despondency has flown, I trust, forever.

I am, very respectfully,

J. C. HERBERT,
Of Maryland.

CHAPTER XIX.

BATH ALUM SPRINGS.

The Bath Alum Springs are situated at the eastern base of the Warm Springs mountain, five miles east from the Warm Springs, forty-seven east of the White Sulphur, forty-five west of Staunton, on the main route from Richmond to Guyandotte on the Ohio river.

This very beautiful and interesting valley is a species of cove embosomed in mountains, having on the east McClung's ridge, on the southeast Mayers mountain, west by northwest, Piney ridge, and southwest, Little Piney. It contains about 1000 acres, and is watered by Thompsons creek. The soil is light and sandy, and the locality must undoubtedly be healthy.

This place has risen in the wilderness as if by magic, within the last year, under the hands of the enterprising proprietor, John W. Frazier, Esq., and of his respectable and highly intelligent manager, Col. Wm. H. Allen. The place was crowded last summer, and it bids fair to be an important competitor with the Rockbridge Alum for public favor.

The buildings at the Bath Alum form a semi-circle. The centre building or hotel is, with the basement, four stories high—90 feet by 45, having a double portico 60 feet long, upon the Gillock order of architecture. This building has 12 rooms $16\frac{1}{2}$ feet square, 15 rooms $16\frac{1}{2}$ feet by 12: one, the ball-room, 40 feet square. The dining-room

runs back from the centre of this building 115 feet by 25, intended for a double row of tables.

On the east of the hotel is, first, a building 63 feet by 40 feet, three stories high, with 24 rooms 15 feet square, having a portico 35 feet long, Gillock order. Next, a block of cabins 60 feet by 18, one story high, with 4 rooms and two lattice-work porticoes. Next is a block of similar description.

On the west of the hotel is, first, a building two stories high, 63 feet by 40, with 16 rooms 15 feet square, a double portico 35 feet long, Gillock order. Then two blocks of cabins as on the east. All these buildings are of brick, and in good style and taste.

The semicircle fronts the south, with ten acres as a lawn. Down the centre are two rows of trees 40 feet apart, interspersed with shrubbery, and extending to the main road. Ranging with the semicircle are three rows of trees, forming, first, a side walk, next, ten feet of ornamental grounds, and then the carriage road. On either side of the avenue or front rows of trees, are clumps of trees and shrubbery, and lattice-work summer-houses and delightful promenades. Between the cabin porticoes are vines, shrubbery and nicely sodded yards.

It will be seen from this detail, that the Bath Alum possesses many advantages over the other establishments in its substantial and ornamental arrangements. It commences its career under the most favorable circumstances. The first of the great group of Springs on the main road going West, it breaks on the view of the traveler in all its beauty and freshness, like a young bride extending her arms to enfold the idol of her love. Here, too, the Circean cup awaits him, and he may drink and drink again,

without any apprehension of being transformed into that horror of the Israelites, but may rather hope, if he has about him any swinish unseemliness, to slough it off, and become as sleek as a mole and as blooming as an opening rhododendron.

The fare was excellent here last summer, and it is to be presumed will be better the next—for in a place entirely new and unfinished many conveniences must have been wanting. The rooms are furnished in much better style than at any of the Springs. The beds are as good as those of any private gentleman, and, indeed, everything at the establishment that came under my observation was worthy of commendation. There are two beautiful parlors, with a fine-toned piano, and I learn it is the intention of the proprietor to have a band of music, and to encourage gaiety and happiness.

With such manifestations of a disposition to please, superadded to the advantage of varied and valuable waters, it is impossible but that the Bath Alum shall take a prominent position among the Virginia Springs, and greatly increase the attractions heretofore exclusively offered by the Hot and Warm in this Eastern section of the Mineral Springs region. But we must have that omnibus plying between the Bath Alum and the Warm Springs, and they must have fancy balls and *Union* parties, now at one, and now at the other. Let there be no narrow-mindedness, no jealousy, but let both, and the Hot, too, be assured that in the plan here suggested they will find their *account*.

It will be pleasant to see good neighbors prosper, as they undoubtedly will, as soon as the facilities of travel, now daily extending toward them, shall invite to those favorite regions the vast multitudes

that now resort to less salubrious climates and less powerful medicinal agents; and if this little book should ever find its way to Great Britain, the author would most earnestly advise the invalids of that country, who annually crowd to the German Spas, to cross the broad and beautiful Atlantic in their magnificent packets, and seek health, pleasure and society amidst our majestic mountains, in a climate equal to any on the globe during the summer season, at a group of Springs unequaled for their variety and adaptation to diseases, and among the descendants of their own land, speaking the same language, inspired by the same social spirit, cherishing the same principles of liberty, and bound to each other by the close though invisible bonds of sympathy and early associations.

And to the people of the North, and to those of the South, the *capillaries* of the Union, I would say, flow on through your respective conduits, to the social heart of the mother of states—Old Virginia. If your streams have been rendered turbid by prejudice; if too much carbonic acid or unwholesome bile has mingled in their currents, she will urge you on to the healthy lungs in her parental bosom; she will oxygenise your *ill blood* in the pure atmosphere of her mountains; she will render it ruddy and healthy, and send it back bounding with impulse, inspiring fraternal affections and sympathies, and connecting the frame of our social and political Union by tissues that shall not necay, and ligaments that can never be loosened.

Intercourse, free intercourse only, is necessary to make the two great sections appreciate each other, and to put an end to that pragmatical, offensive, fanatic meddling, which has served to alienate a

generous, chivalric and warm-hearted portion of this great family of republics.

Outside the lawn, below the public road, and underneath a shelving slatestone cliff of about fifteen feet high, covered by a layer of earth about five feet in depth, are found what are called the Bath Alum Springs.

In limestone regions where caves are found, the rain falling on the surface and percolating through the fissures of rock, dissolves, by means of its carbonic acid, a portion of carbonate of lime, and, falling on the floor or depositing on the walls of the cavern, forms stalagmites or stalactites. Now, there can be little doubt that the alkaline properties of the clay-slate are in like manner, through means of carbonic acid, taken up in solution from the decomposed rocks through which it passes, and thus through such formations are found percolating, waters containing alum and other alkalies.

At the base of the clay-slate cliff are excavated six little reservoirs that catch the drippings of the rock. The upper of these is a strong chalybeate, the second is a chalybeate and alum; the third, fifth and sixth, are alum of different degrees of strength, and the fourth is supposed to contain magnesia. A little up the ravine there is a weak sulphuro-chalybeate, giving also evidences of alum. The rock has the same characteristic dip and appearance as the Rockbridge Alum, but is only about one-fourth its height.

To the science and industry of Dr. Hayes of Boston we are indebted not only for the following analyses, but also for those of the Red Sulphur, White Sulphur and Warm Springs. This is the kind of information we want, aided by observation,

minute and continuous, to afford us an insight into the medicinal agencies of mineral waters, and to enable us to draw distinctions, which though to an ordinary observer appearing distinctions without a difference, are nevertheless highly important.

The class of waters now before us is, I believe, one of comparatively recent introduction as a remedial agent, at least to any extent, and the experiments made with it have exceeded the most sanguine expectations. The Rockbridge Alum has gained a reputation almost unprecedented in the history of mineral waters, and the Bath Alum is also probably destined to considerable celebrity.

Description and Analysis of the Bath Alum Spring Waters of Virginia.

The samples of these waters were received in excellent order and abundant in quantity. On carefully opening the vessels at 60° F. the external air entered, to restore in volume a portion which had been absorbed by the water from the small space below the sealed aperture. With the samples was some of the nearly black clay of the Bath Alum Spring location, which had apparently been derived from the breaking down of shale or slate and shales. On exposure to the air, these samples of water lost their brilliant, sparkling appearance, becoming cloudy and slowly depositing in flocks an ochry matter. They were perfectly colorless before exposure, and when tasted left an acid impression and strongly astringent taste.

When the temperature of these waters is raised, they become turbid at about 120° F., and before any considerable escape of air or gas takes place. Nearly the same effect is produced, if the water to be heated is excluded from air, the partial decomposition being in no wise connected with the escape of carbonic acid. No sulphurous or hepatic odor is exhibited, nor can any fermenting action or change be produced by exposure in warm places.

Analysis.

A standard gallon (58,372 grs.) was the measure of each water used in the determination of the quantities of the substances found. The experiments necessary for ascertaining the presence or absence of other substances than those named, were made on much larger quantities, so as to render the chemical history more exact.

First sample, Bath Alum No. 1,* at the temperature of 60° F.
One standard gallon of this water contains, of the bases:

Soda,	-	-	-	0.720
Patash traces.				
Ammonia,	-	-	-	0.830
Lime,	-	-	-	1.570
Magnesia,	-	-	-	0.960
Protoxide of iron,	-	-	-	6.876
Alumina,	-	-	-	3.080

Of the acids:

Sulphuric acid,	-	-	24.750
Carbonic,	-	-	4.140
Silicic,	-	-	1.390
Organic,	-	-	1.020
Chlorine,	-	-	0.107 grains.

When their proximate constituents are arranged so as to represent, as nearly as it is possible, the compounds which experiments prove to exist in the water, the composition of the whole may be expressed, as—

Pure water,	-	-	58326.557
Free sulph. acid,	-	-	5.806
Carbonic "	-	-	4.140
Sulphate of lime,	-	-	3.805
" magnesia,	-	-	2.821
Protoxide iron,	-	-	14.516
Alumina,	-	-	10.288
Chloride of sodium,	-	-	0.176
Silicate of soda,	-	-	2.024
Crenate of ammonia,	-	-	1.850
Oxygen added to sodium,	-	-	.017
			<hr/> 45.443 <hr/>

Sample No. 2, Bath Alum No. 3. In one gallon of this sample there were contained as bases—

Potash,	-	-	-	0.140
Soda,	-	-	-	0.350
Ammonia,	-	-	-	0.462
Magnesia,	-	-	-	0.484
Lime,	-	-	-	1.049
Protoxide of iron,	-	-	-	10.314
Alumina,	-	-	-	3.680

* When reference is made to numbers as in this place, they designate the position of the Springs at both places, beginning at the lowest, and proceeding *up stream*.

As acids:	Sulphuric acid,	-	-	30.359
	Carbonic "	-	-	3.846
	Organic, "	-	-	1.310
	Silicic, "	-	-	2.800
	Chlorine, a trace.			

These substances united in the form of salts as existing in the water, give the matter foreign to pure water.

The composition of the gallon in grains is

Pure water,	-	-	58317.206
Free sulphuric acid,	-	-	7.878
Carbonic acid,	-	-	3.846
Sulphate of potash,	-	-	0.258
Magnesia,	-	-	1.282
Lime,	-	-	2.539
Protoxide iron,	-	-	21.776
Alumina,	-	-	12.293
Crenate of ammonia,	-	-	1.776
Silicate of soda,	-	-	3.150
			<hr/>
			54.794
			<hr/>

This sample differs from the first in acting much more strongly on the organs of taste, and the quantity of free sulphuric acid is larger than in that water. Both these waters are highly acid in their action, although the acid is united to bases, which in part neutralize its power. When by boiling a deposit takes place, if the heat is continued, the deposited matter redissolves as the water evaporates.

When much reduced in volume by evaporation, the excess of acid clears the organic acid present, and alters the composition of the salts.

In considering the composition of these waters, the protoxide of iron is assumed to be united to the sulphuric acid. The change produced by heating is referred to the action of the crenate of ammonia, and is the same as ordinarily where crenates, free from apocrenates, are naturally contained in a water. When mixed with the soluble salts of silver and exposed to light, the gray color is entirely distinct from that produced by either apocrenates, humates or any decomposing matter. When the metallic silver and oxide of iron resulting from the first action are removed, the mixture by evaporation continues to afford brilliant scales of metallic silver, until reduced to a small volume.

The gaseous matter in these waters is a mixture of carbonic acid, nitrogen and a small proportion of oxygen, and the measure is about 1 volume of the mixed gases to 40 volumes of the water. The carbonic acid is given by weight, so that an uniform expression of acid relation is adopted, and no misconception can arise, if the reader bears in mind the fact that carbonic acid has more than twice the acid or neutralizing power possessed by the strongest fluid sulphuric acid.

WARM SPRINGS, March 17th, 1851.

DEAR SIR,

I give you, concisely, the result of my acquaintance with the Bath Alum Spring and its medical virtues. My knowledge of it as a remedial agent commenced soon after its discovery, and is probably more extended than that of any other person, as for the last ten years I have been in the habit of advising its use in the treatment of disease. At first it was used as a remedy in scrofulous, eruptive and dyspeptic diseases, and in many instances with remarkable effect. But on these points I believe its efficiency has been sufficiently tested to give to the Spring a high character, which I am satisfied it justly merits.

In hepatic derangement of long standing, with all its attendant train of symptoms, where medicine has been tried in vain for years, as well as some of the most approved Mineral Springs, I have known the Bath Alum to produce the most decided good effects, and there are now many living evidences of the truth of this assertion. In chronic diarrhoea, chronic thrush, dyspepsia and nervous debility, and in some cases of neuralgia, I believe it has no superior.

Until recently, its good effects have been restricted for the want of comfortable accommodation, which Mr. Frazier's enterprise has so happily afforded in his large, handsome and admirably kept establishment, for which he deserves the thanks of the invalid community, and I think will receive it in a substantial form, if we are to judge from the popular impression made during the last summer.

In the class of diseases affecting the uterine organs in almost all forms, the influence of this water has been felt most happily in all the cases in which it has been used under my direction. In that deplorable form of disease of this organ, habitual menorrhagia—emptying the blood vessels and producing prostration of the muscular and nervous systems, and rendering life a miserable load—I have known more good to follow the properly restricted use of this water than from all other agents combined. The same may be said of fluor albus, both vaginal and uterine. Many certificates could be produced in support of the foregoing assertions, but as there is now a fair opportunity for verification, it would be superfluous.

I have only attempted to give *you* some idea of the applicability of the water as used and prescribed by me for the last ten years, and some of the diseases in which I have found it beneficial. Under these circumstances, you are at liberty to make such use of it as in *your* judgment may do justice to this new and rising establishment.

Very respectfully,
Your humble serv't,

A. P. STROTHER.

Dr. Burke.

CHAPTER XX.

ROCKBRIDGE ALUM SPRINGS.

These Springs are situated in Rockbridge county, on the main road from Lexington to the Warm Springs, about 17 miles from the former and 22 from the latter. The locality is a valley between the North mountain on the east and the Mill mountain on the west. The latter mountain is about 8 miles across from Millborough to the Springs; and as the road is in some places of a now unusually high grade, the drive eastward is tedious.

Some three years since, all the improvements at this place were destroyed by fire, except a few insignificant cabins and the stables. It is truly like a Phoenix, rising from its ashes, and now bids fair to offer attractions equal to many of the older Springs. The place, indeed, labors under the disadvantage of being isolated and distant from cultivation of any kind, for the land owned by the proprietor, Mr. Campbell, is very limited: the rear of his buildings is in close proximity to the possessions of another, which are as yet in a state of nature. This is unfortunate; for, if the valley in that direction were cleared for even half a mile, it would add greatly to the interest of the place.

The buildings for the accommodation of visitors are: The *Main House*, fronting north, 60 by 30 feet, three stories high, divided as follows: The first floor has a passage through the centre, on one side of which is a reception-room and a bar-room, and on

the other a chamber. On the second floor is a comfortable parlor and three chambers, and on the third are eight chambers. In the rear is a dining-hall, 125 by 30 feet, one story, and in the rear of this are the kitchens, &c.

At each end of the Main House, but retreating from the front, is a house similar in style to the former, 40 by 30 feet, two stories, and divided into four rooms on each floor. At about 50 feet from the ends of the hotel, and forming a semicircle with it, run two ranges of cabins, six on each side, each divided into four rooms. It will thus be seen that there are altogether, or will be, (for the arrangement was not completed at the time of my visit,) 76 sleeping apartments, besides a few cabins in the rear, which, in their crowded period, are readily put up with.

The lawn, containing by estimate of the proprietor four acres, was not touched by the hand of art, but it was easy to see that it was capable of being very handsomely improved; and, with the buildings, which are of brick and in good taste, as to outward appearance, the *coup d'œil* promises to be very agreeable.

At the northwest of the valley, and at the eastern base of the Mill mountain, are the basins called the Alum Springs. The hill forms here a graceful curve of almost mathematical regularity, and is about 100 feet high. It was so nearly perpendicular at some former time, that, being perhaps undermined in some degree by the mountain torrent that swept its base, and possibly after a heavy rain, or water-spout, which those showers sometimes resemble, an avalanche of the soil took place, and left denuded a stratum of clay-slate rock some 80 feet

in height, with a southeastern dip. At the bottom five little wells have been cut out of the rock, into which oozes the water through the interstices of the cliff. A dry wall of sandstone supports the base of the hill, and in this are five doors opening on the wells. Along the whole front is a shed, resting behind on the wall and in front upon rude posts.

It will be recollected that in describing the Bath Alum, I stated the manner in which the rain falling above on the native bed of the soil, carried with it carbonic acid, and by its aid dissolved the alkaline substances existing in the clay slate, (for which opinion I have the authority of Liebig,) and here also the same process takes place. After a heavy shower, therefore, the humus of the soil yields more freely its carbonic acid, by which the solvent power of the water is increased, and it is consequently found to be much stronger at such times than after some days of dry weather.

It will be found, too, on comparison of the Rockbridge Alum with the Bath Alum, that the former is clearer, owing probably to its being better filtered from the earthy particles by the deeper stratum of rock. Whether this gives it any medicinal superiority, it is difficult to decide; but in every other visible and sensible quality they are singularly similar.

Of the five wells, so far as my notes are correct, the upper one is the weakest, the second and third approach each other, and are stronger than the first; the fourth is the most powerful and in greatest demand, and the fifth is not used. From what I have already stated, it has been seen that they differ also in strength from themselves, at different times. In rainy weather the supply is abundant, but in very

dry weather it barely suffices for the wants of the establishment. A few hundred yards above, at the base of the same hill, there is a bold and very fine chalybeate, which in many cases, under judicious advice, may form a valuable therapeutical adjunct to this water.

Since the former edition of this book, the Rockbridge Alum has twice changed owners at very extraordinary advances of price. Last summer it was purchased by John W. Frazier, Esq. for the sum of one hundred and fifty thousand dollars. Mr. Frazier, who was sole owner of the Bath Alum also, has sold to his brother, and brother-in-law Mr. Randolph, half his interest in both establishments. Improvements on an extensive scale are now in progress at the Rockbridge, and it is the intention of the owners to prepare comfortable accommodation by next season for 500 visitors, their servants, horses, &c. These enterprising gentlemen are also preparing to export large supplies of both waters in wood or glass, as may be preferred. This enterprise must prove eminently successful, for analysis and experience both prove that the waters, (very differently from sulphurous waters,) lose nothing by transportation. They have another advantage, too, in domestic use: they may be used for an indefinite time, and in winter and spring with as much benefit as in the summer. This fact has also suggested to the proprietors the design of keeping the Rockbridge establishment open through the year, and charging a reduced price for board, so that persons in moderate circumstances may enjoy the use of the water in spring and autumn. For this arrangement they will be prepared in the autumn of 1853. Mr. Frazier himself will reside at

the Rockbridge to superintend its management, and he is just the man calculated to conduct such an establishment.

Description and Analyses of three Samples of Rockbridge Alum Water from Virginia.

The samples presented perfectly clear, colorless and odorless water; the taste was very stringent, with the more lasting impression produced by iron salts. In closed vessels the water may be heated without becoming turbid, but boiling causes ochry matter to fall. In the composition of Rockbridge waters much more of the salts of alumina is found than in the Bath Alum water.

Rockbridge No. 1.

A standard gallon at 60° F. contains—

Of bases: Sodium and soda,	-	-	0.250
Potash traces.			
Ammonia,	-	-	0.471
Lime,	-	-	0.594
Magnesia,	-	-	0.368
Alumina,	-	-	4.420
Protoxide of iron,	-	-	1.748
Of acids: Sulphuric acid,	-	-	32.626
Carbonic "	-	-	2.623
Organic "	-	-	0.930
Silicic "	-	-	2.460
Chlorine "	-	-	0.257 grains.

The changes which take place in these waters by boiling, the action of sulphydric acid and salts of silver, indicate that these proximate constituents are combined to form the following salts:

Sulphate of lime,	-	-	1.439
" magnesia,	-	-	1.081
Protoxide of iron,	-	-	3.683
Alumina,	-	-	14.764
Chloride sodium,	-	-	0.423
Silicate of soda,	-	-	2.544
Crenate of ammonia,	-	-	1.401
Free sulphuric acid,	-	-	18.789
" carbonic acid,	-	-	2.623
			46.747 grains.
Pure water,			58325.253
			58372.000

Sample of Rockbridge Alum No. 2.

One gallon of this sample measured at 60° F. contains the following substances—

As bases:	Potash,	-	-	0.954
	Sodium,	-	-	0.401
	Ammonia,	-	-	0.300
	Lime,	-	-	1.346
	Magnesia,	-	-	0.600
	Protioxide of iron,	-	-	2.304
	Alumina,	-	-	5.360
As acids:	Sulphuric acid,	-	-	34.219
	Carbonic "	-	-	7.356
	Crenic "	-	-	0.400
	Silicic "	-	-	2.840
	Chlorine "	-	-	0.607

The acids unite to the bases forming salts of the following weights:

Sulphate of potash,	-	-	1.765
" lime,	-	-	3.263
" magnesia,	-	-	1.763
Protioxide of iron,	-	-	4.863
Alumina,	-	-	17.905
Crenate of ammonia,	-	-	0.700
Chloride of sodium,	-	-	1.008
Silicic acid,	-	-	2.840
Free sulphuric acid,	-	-	15.224
Carbonic "	-	-	7.356
			56.687
Pure water,	-	-	58315.313
			58372.000

Sample of Rockbridge Alum No. 4.

One gallon of this sample afforded—

As bases:	Potash traces.			
	Sodium,	-	-	0.173
	Ammonia,	-	-	0.360
	Lime,	-	-	1.346
	Magnesia,	-	-	1.503
	Protioxide of iron,	-	-	2.223
	Alumina,	-	-	7.210
	Organic matter,	-	-	1.020
Of acids:	Sulphuric acid,	-	-	29.686
	Carbonic "	-	-	4.203
	Chlorine, "	-	-	.266
	Silicic "	-	-	1.710
	Crenic. "	-	-	.860

Those substances combined as salts give the following constituents:

Chloride of sodium,	-	-	0.439
Sulphate of lime,	-	-	3.261
" magnesia,	-	-	4.418
Protoxide of iron,	-	-	4.693
Alumina,	-	-	24.085
Crename of ammonia,	-	-	1.220
Free sulphuric acid,	-	-	5.511
" carbonic "	-	-	4.203
" silicic, "	-	-	1.710
Organic matter,	-	-	1.020
			50.560
			58321.440
			58372.000

In comparing these samples with those of the Bath Alum Springs, it will be seen that they are more highly acid in composition, and contain besides more of the tri-sulphate of alumina in a given volume. This salt gives character and activity to these waters, and renders them subjects of great interest when used as remedial agents.

Of the waters hitherto described, those from the Oak Orchard Acid Mineral Springs, of Alabama, Genessee county, New York, approaches most nearly to this composition.

The results of an analysis by Dr. James R. Chilton of spring No. 1, is given for comparison:

- Spring No. 1.—1 gallon contains, of

Free sulphuric acid,	-	-	82.96
Sulphate of lime,	-	-	39.60
Protoxide of iron,	-	-	14.32
Alumina,	-	-	9.68
Magnesia,	-	-	8.28
Silica,	-	-	1.04
Organic matter,	-	-	3.28
			159.16 grains.

Containing nearly three times the weight of solid matter in the gallon, this water does not afford more than half the amount of tri-sulphate of alumina which is found in the average of the Rockbridge Alum Springs.

The supposed presence of arsenious acid, and the expectation that more active bodies than those named would be found, led to a careful examination of the black, decomposed shale from which

the Bath Alum water takes its rise. The shale gave sulphates of iron, lime and alumina to pure water, and contained an abundance of iron pyrites. When two pounds of the clay were decomposed, the resulting fluid contained no arsenious acid or copper. The earthy part afforded a trace merely of the phosphate of lime. The same negative results followed an analysis of the dry mass from four gallons of the mixed waters.

The general conclusions following from the results of these analyses are, that the Bath Alum Springs, containing more ferruginous salts, and having the sulphuric acid more equally neutralized, approach more nearly in composition to chalybeate waters. While the proportions of the salts to the pure water may vary, the relation in *kind* will be preserved.

The Rockbridge Alum waters, on the other hand, have their iron salts almost masked in their action by the predominance of free sulphuric acid and tri-sulphate of alumina. In these, too, we may expect the same general relation of *kind* to prevail, although more or less of the salts is present in the water. Both contain a portion of iron oxide, united to organic compounds, which, independently of the other salts and acids, would constitute them chalybeate waters. In their origin they are quite pure surface waters, which percolating strata undergoing decomposition, take from their soluble mineral and organic matters.

Respectfully,

AUG. A. HAYES, M. D.

Assayer to State of Mass.

1 Pine St. Boston, 9th March 1852.

The distinctions drawn by the chemist between these two waters, (Bath and Rockbridge Alum,) are so minute and clear, that nothing remains to be said on this branch of the subject. Here, however, begins the observation of the physician, and it becomes his duty to turn the information he has received to some practical account.

The great object we had in view in procuring the analyses of these waters has been attained, viz: their individual and comparative qualities. If the reader will take the trouble to compare the analytical tables, he will find that in *kind* (like the Sweet and Red Sweet Springs) they are almost identical, while in some of the principal ingredients, they differ in amount, as, indeed, they also do from

themselves. The waters analysed by Dr. Hayes were taken in the autumn, when these percolating waters are *weakest*; an analysis of the same waters, when taken in the rainy season, would exhibit increased quantities of the various salts. This it is well to recollect, as the quantity of water to be drunk should accordingly be varied. In this view of the matter, it is quite probable that the maximum of alumina in the Bath Alum, in *wet* weather, would reach the maximum of the Rockbridge Alum in *dry* weather. Dr. Hayes tells us that the *proportions in kind* would be preserved. It will occur to the medical man at once, that whether there be 3 grs. or 5 grs. of alumina in a pint of water, or $\frac{1}{2}$ a gr. or 2 grs. of protoxide of iron, or 1 gr. or 3 grs. of free sulphuric acid, are matters worthy of consideration; and in making his prescription, he should have an eye to these distinctions.

Now, in prescribing these waters, it is necessary, in the first place, to form an accurate diagnosis, and to consider well what predominant property in them is adapted to the constitutional malady under which the patient is laboring.

Is his diathesis scrofulous? Then the water containing the larger quantity of alumina, and sulphuric and carbonic acids, would be the most likely to serve his purpose, and he should therefore give a preference to the Rockbridge Alum. But, if his patient be a chlorotic female, or an *anemic* male, he should not hesitate to recommend the Bath Alum.

There are many cutaneous diseases, too, in which these waters may be extremely useful, and in predisposition to phthisis owing to scrofulous diathesis, we may hope for benefit from them. In diathesis of this kind, I would strenuously recommend the

blending with them of the chalybeate in the proportion of about one-third. But if cough, or any physical sign of the *existence* of the disease be present, then I would not consider the addition of the ferruginous water admissible.

Entertaining the opinion expressed above, I think that in cutaneous diseases the Rockbridge Alum will prove most efficient. In phthisical *diathesis*, and in all cases, where, without any active disease, the vital force is feeble, I should prefer the Bath Alum. In some cases of chronic diarrhœa, in prolapsus uteri, in menorrhagia, the choice would be in favor of the Rockbridge; while in the debility sometimes remaining after hepatic derangement, and in some cases of dyspepsia, the Bath waters may prove more available. The profession will understand that in presenting these opinions, and, indeed, all other opinions in this report, it is not my intention or wish to claim the right of speaking *ex cathedra*, or laying them down as incontrovertible. They are made up from the best lights I have been able to procure, but they would be much more satisfactory to myself, if in most instances they had been founded on a more comprehensive experience. There is one remark to be made here with regard to the analyses of these waters—that they set forever at rest the mischievous, if not malignant, reports that have been circulated of poisonous properties in them. Arsenious acid and copper have been reported by some wiseacre to exist in them. Reports of this kind, so easily circulated, and credulously believed, calculated not only to injure the enterprising proprietors, but to mislead and deceive afflicted invalids, deserve to be stamped with reprobation and infamy. I called the attention of the chemist especially to those reports, and asked him

to make a strict examination for the alleged noxious ingredients; the results are before you, and must be satisfactory to all who are not atrociously malignant or hopelessly stupid.

Continuing a comparison of these waters, and their adaptation or contra-indication in disease, we will perhaps find that, while both are useful in passive dropsy, the Bath water is the most available. The same may be said of venereal impotence, marasmus, neuralgia, and a host of nervous diseases. In epileptic and apoplectic subjects, neither water is likely to suit. In secondary syphilis, the Rockbridge Alum has had some reputation. In bronchocele, we have heard of no cure performed by either water. They contain no iodine, and in this disease iodine is the sovereign remedy. In diseases of the heart, and in asthma, these waters are contra-indicated. In the phosphatic diathesis, the Rockbridge Alum will be found useful, and the Bath also, but in a less degree. In rheumatism and gout, little is to be expected from the Alum waters, except so far as the latter may be connected with dyspepsia, and the former dependent on defective innervation. There are other diseases I might include in this catalogue, but the views I have given will, I trust, lead to a correct discrimination between these kindred waters. It must be gratifying to the friends of the Rockbridge Alum to find that its high reputation is amply sustained and accounted for by the tests of analysis, while the friends of the Bath Alum have abundant reason to be satisfied with its similarity to an agent so celebrated; and the public at large, and the medical profession, who have no partialities to indulge, are enlightened on a subject of so much importance.

Daggers or Dibrells Spring is situated in Botetourt county, in a pretty glade near the western base of the Garden mountain, on the main road from Lynchburg to the White Sulphur, *via* Natural Bridge, from which it is distant about 14 miles.

I was informed by the late worthy proprietor, Charles L. Dibrell, that the number of visitors sometimes reached 200; but I should think 150 as large a number as could be accommodated with any degree of comfort. The buildings are well arranged for convenience and effect. The lawn is a very beautiful slope, descending from the hotel to the spring some 300 yards, and is well shaded by fine indigenous trees. Altogether, it is an interesting spot, and affords to the weary traveler, after a long day's journey, a sweet haven of repose and quietude, from whence he may retrace, with his mind's eye, the magnificent scenery he has just passed.

The following analysis is said to have been furnished by Prof. Rogers:

Solid Contents.

Carbonate of soda,	Carbonate of magnesia,
Sulphate of soda,	Peroxide of iron,
Chloride of sodium,	Silica dissolved.

Organic matter, containing chloride of potassium, nitrogen, carbonate of lime, and carbonate of ammonia.

Gaseous Contents.

Carbonic acid,	Sulphureted hydrogen,
Oxygen,	Nitrogen.

This analysis is of little value, and affords but slight aid towards the knowledge of the proper use of the water. It is much like the Fauquier White Sulphur in its perceptible qualities, and has been found useful in a large class of diseases to which most of the other sulphur waters are applicable.

CHAPTER XXI.

FAUQUIER WHITE SULPHUR SPRING.

On the 19th of July 1844, after an early breakfast, a horseman, accompanied by a young lady, also mounted on her palfry, left a comfortable hotel at Fredericksburg, and crossing the bridge to Falmouth, took the road leading to the Springs. The road for several miles from Falmouth was rough and the scenery interesting. At the end of twelve miles they reached a very plain frame house, whitewashed, and at some little distance, looking as if the occupant had, benevolently, bored holes all over it, for those gay little annual visitors, the martens. A nearer view, however, exhibited the reality, which was nothing more than circular black spots made with lampblack on the white-washed boards. The notion was queer; and the travelers, deeming it probable that the *Spotted Tavern* might not only serve to afford them shelter from a burning sun, but also some amusements, determined to dismount and explore the premises.

Reining up their steeds, two lusty negresses, who had been scouring the porch with all their might, came forward and took charge of the horses, and a blast from a horn soon brought up the ostler. Entering the house, the travelers were agreeably surprised by the neat appearance of everything around them. The floor, the furniture, the snow-white table-cloth, the clean tea-things, the nice biscuits

and cool fresh butter—all, all were most inviting. The travelers did ample justice to a *second breakfast*. How refreshing it is to one who has been living in the city to get into a nice country house! You are so much at your ease—your spirits are calmed and tranquilized. Where, too, but in the country can you get a draught of clear, cool water from the limpid spring or deep well. . .

After a day spent most agreeably, partly under a beautiful arbor, the travelers mounted for White Ridge, distant about eight miles. The view of the mountains in approaching this place was pleasing, and they had formed altogether favorable anticipations. The host and hostess were kind, but not very well prepared to entertain travelers. The little up-stairs rooms in which they were sent to lodge were so suffocating, that throwing open his window, the elder traveler lay across his bed, with his head on the widow-sill, to try and inhale a little fresh air, while his more delicate companion was suffering all the tortures which such an atmosphere could inflict. How they rejoiced at “the morning’s first beam!” How hurriedly they huddled on their clothes, and descended to the porch, and looking out upon the hills, inhaled the balmy air! Here, too, they exclaimed, is the lovely country; but it is distance alone that lends enchantment—so let us mount and breakfast in *Germantown*.

The travelers *did* mount and entertained themselves by speculating on the subject of Germantown; how many stores and blacksmith shops and taverns were in this imaginary village. They were told that after riding ten miles they must turn off a little from the main road; and having followed directions, there suddenly burst upon their view the

Germantown Inn, alone in its glory. It was a frame house, Low Dutch in appearance, having a neglected air, and the best looking furniture it possessed seemed to consist of white-headed children. They would have felt much more interest in it had they then known it was the birth-place of the late illustrious Chief Justice Marshall.

But, alas! there did not seem then to be a vestige of the refinement and cultivation that must once have graced it. In a valley at some distance there appeared to be the house of an opulent person, but with that exception the neighborhood seemed desolate and the land much worn. I recollect perfectly a man, who was either a schoolmaster or a shoemaker, and who came with or for the mail, and who discoursed most eloquently on all the political topics of the day. He was an ardent Whig and Clay man, and talked "like a book." The tariff, Missouri compromise, internal improvements, &c. he had at his fingers' ends—I might have said at his tongue's end—but that had no end. This man was a rich specimen of the *genus* Yankee. He asked questions, and answered them to his own satisfaction, *guessed* most flippantly, knew every man's business, and seemed (in this alone he was no Yankee) to care very little about his own. His advent was fortunate, for it was the only green spot in our visit, the place being destitute of every comfort. After some rest, we mounted our horses again and reached the Fauquier Springs about noon, hungry, thirsty and exhausted.

How delightful it is, after some privations, to return again to the comforts of civilized life! Such contrasts give a zest to enjoyment unknown to persons always immersed in unintermitting luxury.

After such a travel, a warm bath, a glass of lemonade, a tempting luncheon, a nice couch—how soothing, how refreshing, how exhilarating!

It appears from a report now before me, that the medicinal qualities of the Mineral Spring were known and highly appreciated in the neighborhood long before it became an object of general resort. The resort of the neighborhood was constant and persevering, and caused such interruption to the farm operations of the former proprietors, that it induced one of them to fill up the spring; but so clearly had its value been established, that Mr. Lee was induced to purchase it, with the view to open it to the public. His experiment was at first on a small scale, but the throng of visitors soon demonstrated the expediency of more extended operations and a greater outlay of capital. Mr. Green united with Mr. Lee in the enterprise. They have planned and executed improvements better calculated to promote the comfort and please the tastes of visitors, than are to be found at any other watering place in the state. The buildings already constructed might accommodate 800 guests, and are so contrived as to admit of indefinite enlargement without deranging the symmetry of the plan.

The improvements are, a pavilion, 188 feet long and four stories high, with a grand portico on its western aspect, overlooking the lawn and a long line of diversified country. I have seen nothing to compare with this magnificent promenade—I mean, of course, in the country. On the eastern aspect, it was the design of the proprietors to erect a similar portico, and to connect that front with another pavilion east of it, 100 feet long and four stories high; but when the timbers were all ready, the

workshop was destroyed by fire—and this part of the design remaining unexecuted, gives an unfinished appearance to this front of the *great pavilion*. Besides the two great pavilions just described, there are two large brick buildings, three stories high—two others 56 feet long each, and two stories high, and twelve other brick buildings, 56 feet long each—(all covered with slate except one,) the bath-house and the spring-house.

All these improvements and 1184 acres of land, together with a tract of 1750 acres, lying south of the Rappahannock river, were conveyed in August 1837 to a company, in 2500 shares, at \$68 per share, making for the whole \$170,000, by the then proprietors, Thomas Green and Hancock Lee. By this company it has since been held.

The interior arrangements of the pavilions and cabins are well calculated to afford comfort. The ball-room, drawing-room, dining-room and parlors are all spacious and suitably furnished. In the bottom of the vale (what the Romans would call *convallis*) is the mineral spring, suitably enclosed and protected by a pavilion.

I regret that it is not in my power to lay before the public an analysis of this water. But it is the duty of the proprietors of all those springs to have an analysis made, and it is to be hoped they will see their interest in gratifying the public with information so essential.

Judging from those qualities perceptible to the senses, the Fauquier White Sulphur is probably applicable to most of the diseases for which recourse is had to the Western Sulphur Springs. It is a light, agreeable water; and if not as highly charged with gases and salts as the former, it may never-

theless be very valuable as a curative agent; and indeed its reputation, acquired by an experience of its value for so many years, is the best test of its power over disease.

This establishment is now leased from the company by Thomas Green, Esq., for whom it is managed by Col. Ward, an attentive landlord and highly respectable gentleman. Its accessibility from Washington, Baltimore, Alexandria, Richmond, &c., the elegance of the improvements, the style of living, the gaiety of its society, its tournaments, its fine climate, the intrinsic value of the waters—its comfortable bathing establishment—all these insure to the Fauquier White Sulphur a permanent and progressive patronage.

It is now some years since I have been at the Fauquier White Sulphur, and I write, in some measure, from memory, of what I saw during a brief visit. It is, however, a place not easily forgotten by one who claims to admire everything beautiful in nature. It is capable of still higher improvement, and no doubt will one day or other be much more extended than it is at present.

The grounds are beautifully laid out, and diversified by walks, flowers and shrubberies. A true mark of taste in the arrangement of public grounds, is the study of convenience. Here, from the centre of the pavilion to the spring, there is a grand walk, the sides of which are richly ornamented with flowering shrubs, and diverging from it are numerous serpentine walks leading to the cottages that complete the semicircle. On the main avenue there is a pretty fountain, in which are seen beautiful *gold fish*, displaying their burnished sides in the bright rays of the sun for the amusement of the visitors, especially the children and nursery maids.

CHAPTER XXII.

JORDANS WHITE SULPHUR.

A tract of country, extending in length 16 miles, and in width about 3 miles, denominated the "Pine Barren," lies in the bosom of the fertile limestone region constituting the eastern portion of Frederick county; and in this region, 6 miles from Winchester and $1\frac{1}{2}$ from Stephensons depot, is the mineral water known as *Jordans Spring*. The subsoil here is clay-slate; the soil thin and easily exhausted. Lime, from its more fortunate neighborhood, has been used with advantage. In return, nature, as if to compensate for her stinted fruitfulness, enables it to offer its healing waters—a boon, perhaps, more valuable than lime. In limestone regions, dysentery frequently prevails as an epidemic, or endemic, and there is no better refuge from it than a transition to a poor, healthy district like this, possessing waters essentially different in their character. This should not be considered, therefore, as a *dark spot*, but as a provision of nature for health and comfort.

The spring rises in a vale of several acres, surrounded by hills of moderate elevation. The place has a quiet, rural appearance, but to a lover of the picturesque it presents little of interest. It is just such a place as parents would desire for their children, where they might gambol and enjoy themselves, free from the dangers that sometimes attend places of public resort. The grounds are very little ornamented. They are shaded by aspens, syc-

mores and willows. The spring issues from a stratum of black slate, like all the sulphur waters, and, indeed, some of the finest saline waters. The water is confined in a wooden box, about 16 inches square and 3 feet deep, which is surmounted by an octagon structure erected on columns.

There is no analysis of this water. Its temperature is 58° . It is a pleasant sulphur water, combines well with soap, and gives a soft velvet feeling to the skin. We may infer from the geological character of the region in which it appears, that it is to a great degree exempt from the irritating substances that impregnate the waters of limestone districts. In this respect, as well as in its temperature, it bears a striking resemblance to Orricks Spring, near Bath, a brief notice of which will be found in my remarks on the *Berkeley Springs*. It is not probable the Jordan Spring will ever attract a very large company, or gain any wide-spread celebrity as a medicinal agent, but it will be found a good diuretic, a safe alterative, and useful in many of the forms of chronic disease to which sulphur waters are applicable.

The arrangements of the establishment are plain, but comfortable, and sufficient for the accommodation of 150 visitors. Mr. Jordan, the proprietor, resides there, and is a kind host and agreeable gentleman.,

CHAPTER XXIII.

HEALING SPRINGS.

South of the Hot Springs, and at the distance of $3\frac{1}{2}$ miles, are the waters known by the above auspicious name. They are as yet unimproved, and therefore might with propriety be omitted in this report; but as they are in some respects peculiar, and waters of great probable value, a brief notice of them may not prove uninteresting.

They are situated in a gorge of the mountains, near the road to the celebrated "Falling Spring," one of the curiosities of this region. Turning from this road through a grove of fine forest trees, you descend a steep and rugged hill, at the base of which is a branch, dry in the summer. Crossing this, you reach a piece of ground so covered with cropping sandstone that it is difficult to make your way over it. Amidst these loose, disjointed rocks rise two of the springs, one of which is excavated so as to form a little pool enclosed with a pen of logs, and used for bathing. The other, a few feet distant, is confined in a rude reservoir, and used for drinking. In a field, some 200 yards lower down, there is a third spring, also formed into a pool, and used as a bath by the neighbors and casual invalids. This is distinguished by the name of the "Tooth-ache Spring." I tested all these springs with a good thermometer, and found the temperature uniformly 84° , when that of the surrounding atmosphere was 80° . A water more clear, light,

exhilarating, I have never seen. I tried to persuade the proprietor to furnish me with an analysis, but failed. This is one of the difficulties I have encountered in my efforts to illustrate the virtues of the mineral waters.

In their composition they are apparently very like the Sweet Springs, or perhaps more so to the Red Sweet, since the chalybeate flavor is more distinct than that of the former. Like the springs mentioned, they bubble up from the ground. They are probably much purer of sulphate and carbonate of lime than either, and contain, also, less carbonic acid. This is partly to be inferred from the sandstone stratum from which they proceed, and from the indications afforded by the deposit left by them in the course of the stream. The *tufa* so characteristic of the other waters is also found here, but by no means in the same proportion, proving that although they contain those salts, they are in smaller quantity.

From a water thus constituted, we should expect a mild tonic and alterative effect, and so far as we have been able to collect information from Dr. Strother, and other intelligent sources, such has been their action. It is said they have almost a specific effect in rheumatism, in sprains, in the cure of tetter, scrofulous ulcers, and in all the cutaneous diseases. Indeed, if you were to listen to the neighbors, you must concede to them miraculous powers. That the water is a peculiar one in several respects there is no doubt, and as to its temperature, it stands alone in the Springs region. On the confines of the cold and warm, it is the most delightful bath that can be imagined. I plunged into it by way of experiment, and remained in 12 minutes,

and a greater luxury in bathing I have never enjoyed. It is the only water I have met with of a temperature that may be denominated *tepid*, and therefore possesses advantages of no ordinary character. With the least possible shock to the system, it gradually abstracts from it its superabundant caloric. In enfeebled constitutions, therefore, it will probably prove a more efficacious bath and more appropriate than the Warm, Hot, Sweet, or Red Sweet. It will admit of exercise in bathing, which the Hot and Warm do not, if administered properly.

In rheumatism I shall not be surprised if it gains a celebrity equal to either, for, as I shall have occasion to remark more at large hereafter, it is a great mistake to suppose that all cases of this disease require or will admit of the *Hot Bath*.

The whole scene, now, is as rude and wild as nature can make it, but it is just such a place as a man of genuine taste could render eminently picturesque and interesting. If improved with judgment, and rendered accessible by turning the great western road that way, which can easily be done, it will prove a great acquisition to the neighboring group, and especially to the *Hot Springs*, and will rapidly grow into favor with those for whom the waters of its class are appropriate. I am pleased to learn, since the above remarks were written, that the proprietors are engaged in erecting here a hotel for public accommodation. During the last season these Springs were visited by numerous persons, many of whom are said to have camped out for the purpose of using the waters.

CHAPTER XXIV.

SHANNONDALE SPRINGS.

These Springs are in Jefferson county, $5\frac{1}{2}$ miles from Charlestown, on a peninsula of the Shenandoah, aptly denominated the "Horse Shoe." The peninsula includes 190 acres, the heel being attached to the base of the Blue Ridge. As you approach the river, the gracefulness of its curve, the unbroken lines of varied and noble trees that adorn its banks, the placid, lake-like appearance of the water, excite your admiration; but when you enter the wherry, and look more nearly on the dark green waters, your admiration and pleasure are greatly enhanced. Ascending the bank, you now wind along it about a quarter of a mile, and then enter the lawn of Shannondale. From a plain of about 30 acres there arises a hill of equal extent, and of gradual ascent, to an elevation of about 130 feet. Half way up this hill are the hotel and cabins erected for visitors. Ascending to the summit you have in view the whole scene, including two-thirds of the horizon. The remainder is excluded only by a dense grove that intercepts the sight. That which will first attract attention is the beautiful river, by whose limpid waters you are separated from the surrounding world, and whose stream the eye seems anxious to pursue from that quiet cove in the south, where it begins its ambient course, to that point at the northeast where it is lost to your vision in a deep and narrow defile. Next the observer examines in detail all the adjuncts of the scene, and

they are numerous and picturesque. Looking to the west and north, you have an elevated, fertile and highly cultivated region, diversified by hill and dale, ornamented here by fine isolated trees, there, by groves and skirts of wood-land, enlivened by herds of cattle and flocks of sheep, and exhibiting extensive fields of yellow wheat and green Indian corn. In this range of the eye, and just across the river, is the imposing mansion of Geo. W. Peters, Esq. Looking north, a view of the distant country is intercepted by a bluff rising immediately over the river. The placid form of the river changes here, and is succeeded by a rapid, interrupted stream. A limestone crag, called the "Lovers Leap," rises to a perpendicular height of 120 feet, and is surmounted by a dense grove. This is an object that would well deserve the pencil of an artist. From this rock to where the river disappears, the northern bank retains its primitive wildness. Diverted from that to the south, the eye follows the Blue Ridge until it is lost in the horizon.

After the visitor is satisfied with beholding distant objects, he next examines the grounds around, and finds in them all the simplicity of nature—"when unadorned, adorned the most." This maxim is far from being universally true, however, and certainly it is not so here. Nature is, indeed, the substantive part of all beauty, but judicious art softens her harshness, conceals her obliquities, embellishes her ruggedness, clothes her nudity, and gives prominence to her perfections. Landscape is best seen by glimpses. It must neither be shrouded up by too much shade, like a Turkish woman, whose veil no eye can penetrate, nor yet nude and uncovered like the bold and forward woman, who

exposes her bosom and shoulders to the gaze of foppish impertinence. In this respect Shannondale is favored, being studded over with fine elms, oaks, sycamores, and other indigenous trees.

The buildings are ordinary, but sufficient to entertain 120 visitors.

There are three springs, one of which only seems to be in general use. The stream is very moderate. The temperature 63°. The water is clearly chalybeate, and contains no inconsiderable amount of the usual salts, though in what proportions cannot be stated, as there is no *analysis* worthy of reliance. Its geological position is in a limestone district. It is stimulating and tonic, and may be used in the same conditions of the system as the Sweet and Red Sweet Springs. It is in most instances aperient, and acts favorably as a diuretic. It has some resemblance to the celebrated water of Bedford, in Pennsylvania, but neither with this nor the other springs with which it has been classed, can it compare as a medicinal agent. In convalescence from hepatic disease, and in many other conditions in which a tonic is admissible, it will prove useful. Alternated in its use with Jordans Spring, it may be a great convenience and advantage to the neighboring population, but it will never probably attain much distinction by its curative powers.

To the lover of beautiful scenery, to the angler, to the fowler, to him who delights in solitary rambles, to the man of poetic temperament, to the lover, to the day-dreamer, Shannondale presents unsurpassed attractions. Such a man would be willing to imagine the Shenandoah the veritable *Lethe*, drink its waters, and forget the cares, the sorrows, the troubles of the world beyond.

CHAPTER XXV.

BERKELEY SPRINGS.

Bath, the county town of Morgan, is situated in a handsome valley, near the great railroad from Baltimore to Cumberland, 130 miles from the former and 49 from the latter. Visitors leave the railroad at *Sir Johns* depot, and reach the Springs in coaches, by a good mountain road $2\frac{1}{2}$ miles in length.

The little metropolis contains the usual edifices—a court-house and a jail, and moreover, a Catholic and a Methodist church. The great sources of interest and attraction here are its Mineral Springs, originally called the Frederick Springs, sometimes the Warm Springs, but now known as the Berkeley Springs. These Springs were the first known, as, assuredly, they are among the most important of the mineral waters of Virginia. They were frequented before the Revolution, and visited by Washington and other distinguished personages, who had cottages erected for their own accommodation. The property of these Springs was originally vested in Thomas Lord Fairfax, who made a grant of a few acres of land and the water privileges to the state, reserving to his own use one spring, still known as “Lord Fairfax’s Spring,” and thereon obtained a charter for laying off fifty acres as the site of a town, which was accordingly laid off and partially built upon. The state grounds and water privileges were vested in a body of trustees, whose successors continue to govern and control them.

The Springs issue from the base of the "Warm Springs Ridge," which, running on the west of the valley, rises at an angle of about 35° to an average height of 400 feet. The mountain side is clothed with a dense forest of trees of the usual variety and connected with the vale—

"The vale in whose bosom the sweet waters meet,"

by numerous walks and terraces. A lovely grove of three or four acres contains the Springs and their appendages.

The Springs are four in number. The lowest is surmounted by an edifice resting on ten columns, having a spacious room above used as a lounge for gentlemen. It is called the "Gentlemen's Spring," and supplies water to the "Gentlemen's Baths." It is exceedingly copious, yielding several hundred gallons in a minute.

Next to this Spring is that known as Lord Fairfax's Spring. It is uncovered, and its waters run waste, though abundant enough to supply baths for hundreds.

A few yards above Fairfax's, is the "Ladies Spring." This is a copious and beautiful fountain, covered by a Pagoda resting on columns. It also is open above, and is usually occupied by the band and some of the visitors. It commands a view of the whole grove and of the numerous groups that are enjoying its shade, sitting under the trees, or treading the walks that wind in every direction.

Above the "Ladies Spring" there is yet another, small and uncovered, from which, during the season, the inhabitants of the village procure their supplies of water.

Such are the Springs of *Bath*, supplying 1,000 to

1,500 gallons in a minute, and in this respect approximating more nearly than any other the Warm Springs of Bath county. Two streams, proceeding from them and passing through the grounds, unite just below, and form a rivulet called the Warm Springs Run, which enters the Potomac opposite Hancock in Maryland.

The bathing conveniences here are extensive and judiciously planned. They consist of the *Gentlemen's Baths*, the *Ladies Baths*, and the *Shower, Douche and Warm Baths*.

The house in which are the gentlemen's baths, is two stories high. The lower story is divided into ten apartments, containing each a reservoir 12 feet long by 5 feet wide, and supplied by a large and rapid spout. These reservoirs are coated with cement, and contain each 1600 gallons of water. The apartments all open on a long and closed vestibule, used as a *dressing-room*.

The *Ladies Baths* are similarly arranged, but the house is older, and either requires repairs, or, as I hear the trustees contemplate, the erection of a new building. Adjoining this there is another building, new and more imposing, in which there are two ranges of 5 apartments each, containing shower, douche and artificially warm and tepid baths. They are well contrived, being supplied from a reservoir above, which is filled by a *water ram*. There are still wanting here two *swimming* pools—one for ladies, and one for gentlemen, similar to those at the Sweet Springs.

These we understand the trustees are determined to supply, and when this is done, Berkeley will far surpass all the Springs of Virginia in facilities for bathing. One hundred persons may then bathe at one time in their waters.

The temperature of the Springs is 74°—that of the Bath is something lower. I deeply regret my inability to gratify the profession by laying before them an analysis of these noble fountains, *but so it is*. They have belonged to the state since 1776, yet we are almost as ignorant now of their composition as those who lived under the colonial government. The mountain at the base of which they rise is sandstone, but the stratum through which they issue is *black slate*. They are limpid and soft, and evidently alkaline; indeed, the taste of magnesia is quite palpable. They combine with soap, and leave the skin soft and unctuous.

In rheumatic affections, they have a high reputation, and of long standing; nay, a specific power is claimed for them in this disease, and of this it is said ocular demonstration is annually given by an array of crutches left here as shipwrecked mariners formerly hung up their dripping garments in the temple of *Neptune*.

That they possess much power in several forms of this disease, in gout, neuralgia, dyspepsia and other diseases to which alkaline waters are adapted, there can be but little doubt. In dyspepsia, attended with acidity; in lithic acid gravel; in affections of the mucous membrane of the alimentary canal; in bronchitis; in menorrhagia, dysmenorrhœa and amenorrhœa; in chlorosis and constitutional debility, generally; in that nervous irritability usually the accompaniment of dyspepsia; in chronic diarrhoea and dysentery, and the summer complaint of children, these waters must possess decided value. They are mild and safe, apparently very pure from irritating earthy substances, and therefore of the class called *sedative*. They

are, in this respect, totally opposite to the Sweet and Red Sweet Springs—the latter making their first impression on the system by stimulation, and these by sedation. This fact will be instructive to the physician, and enable him to assign to each its peculiar agency and merit. Let us suppose a case: A patient applies for advice under these circumstances: he is suffering from dyspepsia, with acidity of stomach, flatus, pulse quick, nervous system irritable, headach, temper fretful, bowels irregular, urine high colored. Which of the waters we have been treating of would be most likely to afford relief? Assuredly, *Berkeley Springs*.

This water being light, soft and free from irritating salts, would quiet the stomach, its mild alkaline quality would tend to modify the too acid secretions; digestion would proceed with less impediment; the head would participate in the calm; the nervous system generally would be tranquilized; the excited action of the arteries would cease; the feeling of wretcheduess and fear of impending evil would be removed, and the whole man restored to gaiety and hopefulness. But send such a patient to the Sweet or Red Sweet Springs, and it is probable that all these symptoms would be aggravated. How bountiful is nature! In the Sweet and Red Sweet Springs, she gives us waters highly stimulant and roborant, adapted to restoring and invigorating the exhausted powers, and here she gives us decided sedatives to calm the irritability of the tissues, and bring them into rythmical and harmonious action.

It is its sedative quality that renders it so efficient in *rheumatism* also. Among the great mass of the people there is an opinion prevalent that the *hot*

bath alone is useful in this disease. But the medical man, who knows its Protean character, will not make this mistake. Undoubtedly the Hot and Warm Springs *are* the most effective remedy in many cases of chronic rheumatism; but suppose the disease has attacked the heart, what physician in his senses would direct his patient to those waters? In neuralgic rheumatism also, and in cases simulating gout, and in the gouty diathesis, the Berkeley water would afford far greater probability of relief. That the hot bath removes rheumatism by its *stimulating* power, we have abundant proof in the fact that it invariably increases the pains and brings on the acute form before relief is experienced. Cases of chronic gout, too, are only relieved by producing an acute attack in some circumscribed position. This is not the case with the cold bath at Berkeley. The former acts by concentration, the latter by diffusion. The former throws the whole weight on a single part, and brings the remainder of the system, by a healthy action, to the rescue of that part; the latter diffuses the peccant property through this system, dilutes it, and removes it finally with less disturbance of the part primarily affected. In rheumatism and gout, therefore, the hot and highly charged saline waters, while most efficacious in several forms of those diseases, would be contra-indicated in others, and in these last, the cooler, milder, sedative waters, such as Berkeley and Capon, hold out the best chances for relief. The *Healing Springs*, if ever brought into general use, will probably, in many cases, prove superior to all the bathing waters as yet known in Virginia, possessing as they do a temperature that makes a very slight draft on that of the body and on its phy-

sical powers, while it is as pure perhaps from saline matter as the waters of Berkeley or Capon. When we speak of the bathing waters, we mean to be understood as also advising their internal use. Both, in serious cases, should be regulated by the advice of a physician.

The baths of Berkeley are certainly delightful—not, perhaps, giving you such a feeling of elasticity as the Sweet Springs; but calming and tranquilizing your system, making you pleased with yourself and all around you. Let me however not be misunderstood. When I class this water as a sedative, I do not mean to say that it should be used in every case in which a sedative is indicated. Used only as a drink, and in moderation, it might be perfectly safe; but in serious *organic* diseases of the lungs, heart, &c., no intelligent physician would advise a plunge into cold water any more than into a *hot bath*. In such cases, extremes are to be avoided, as any sudden revulsion might be followed by serious consequences. In hectic as well as in other fevers, sponging with cold water is comforting and highly serviceable, but this is a very different thing from a cold plunge or a cold shower. This bath would, doubtless, in such cases, be more innocent than the Sweet or Red Sweet or Hot Springs, yet I would not advise it in organic diseases of the heart or lungs, because all observation leads to the conclusion that, in such conditions, bathing, except in degrees somewhat below the temperature of the blood is hurtful. From 84° to 94° would probably be the most favorable, and then the waters should not be highly charged with gases, nor largely impregnated with saline ingredients.

I fear I shall be thought too specific in these dis-

tinctions, but they seemed to me important, and at all events, I look for my apology in my anxious desire to throw all possible light on the subject.

The waters of Berkeley are destined to great celebrity, and there is no reason why *Bath, Virginia Bath*, may not, in time, rival the fame of its *European* namesake. It is a treasure to the eastern cities, worth more than the richest *placer* of California. It is impossible that advantages such as the Berkeley Springs possess can be much longer overlooked. We shall see a beautiful village spring up here, ornamental cottages erected, refinement and elegance prevailing, parents delighting in the joyous gambols of their children, and happy children disporting in these lucid waters.

The number of visitors now varies from four to six hundred. The village, we are told, can accommodate eight hundred. There are two hotels here, one "*Strother's Hotel*," owned and kept by Mr. Strother, the other owned and kept by Mr. O. Ferral. The former can accommodate 400 guests, the latter 200. It would be foreign from the design of this work to enter into detailed descriptions of the arrangements at our watering places; but I may be permitted to say that at none of those places have I seen such attention paid to convenience and comfort as at *Strother's Hotel*. System, good management, good taste, are visible throughout the establishment; and these conduce in no slight degree to the recovery of the invalid, as well as to the satisfaction of the votaries of pleasure. The hotel of Mr. O. Ferral also is said to be well managed.

ORRICKS SULPHUR SPRING.

About $3\frac{1}{2}$ miles from Bath, near the road to *Hancock*, and on the "Warm Spring Run," there is a Sulphur Spring, known as Orricks Spring. It is unimproved. The temperature is 58° . It is a very delicious water. One day or other it will be of some importance. I notice it here, in connection with the Berkeley Springs, being well satisfied that, if a good communication is ever made between it and them, it will be found an admirable auxiliary to those waters.

CHAP. XXVI.

CAPON SPRINGS.

Capon, or Watsontown, is situated near the southern extremity of Hampshire county, 23 miles southwest of Winchester, whence it is reached by a mountainous but admirable road: it is at the western base of the North mountain.

Descending the mountain, through vistas in the forest, white masses are indistinctly seen, which, on a nearer view, you find to be the extremity of a mountain ridge standing precipitously in cliffs of white sandstone over the deep gorge you have now reached. These *cyclopean walls*, interspersed with pine and other trees, and reaching an elevation of six hundred feet, afford a scene eminently picturesque. Turning the angle of this mountain, where it has evidently been sundered by the mighty floods, through a very narrow gap, you enter Capon. The valley of Capon is a narrow defile ranging from one hundred to four hundred feet, and extending $3\frac{1}{2}$ miles to the Capon or Cacapon river. Near the latter it expands somewhat, affording one or two little cultivated spots.

The mountain to which I have alluded is called "*Bear Ridge*;" and on its southern and western aspects has the same grand and picturesque appearance as it presents on the southeast. Here, too, the masses are more distinct and insulated, several of which you might imagine to be colossal statues erected to the memory of the mighty dead. This

is the *Barren Rock* to which Mr. Webster pointed in his speech at Capon, that has been so highly and so justly praised.

At the base of this mountain, under a pile of loose rocks, apparently detached from a higher position, precipitated therefrom and arrested here, there bubbles up the beautiful fountain that gives its principal interest to the scene. It is precisely as nature left it, and this is the best evidence of good taste we have met with here. At almost all the other watering places attempts have been made to beautify the fountains by erecting over them structures more or less costly. It but mars that interesting simplicity which we look for in such situations, just as if you were to put a three-cocked hat on the head of a ploughman in his shirt sleeves. The water is conducted from the spring to a large, square and deep reservoir, whence the baths are supplied.

Just within the entrance, and above the spring, is an open frame building called the *Pavilion*, used as a lounging place. A little below the spring are some old taverns on both sides of the road, sufficient to lodge 150 persons, and about 100 yards lower down, is the vast building called the "Mountain House," one of the largest structures in the southern country. The front is 236 by 40 feet, and 5 stories high. It has a portico 200 feet long, 16 wide and 35 high. This is erected on columns of the Doric order, 3 feet in diameter, and as may well be supposed, it is grand and imposing. The wing of this building is 196 by 40 feet, 5 stories high. These dimensions will give some idea of its internal capacity. The dining-hall is 236 by 40 feet, and can seat 1,000 guests. It is said the

"Mountain House" alone can lodge six hundred. The whole accommodation of the place, therefore, is equal to about 750 visitors.

Immediately across the road from the hotel, but having a neat area some 40 feet deep, in front stands the *Bathing Establishment*, at the base of the opposite mountain.

This structure consists of a central building, two stories high, and 42 by 30 feet. It contains rooms for the trustees and parlors for the bathers. From it there extend two wings, each 119 by 20 feet and one story high. The whole front, 280 feet, presents a beautiful colonnade, which is not only attractive to the eye, but affords ample space for exercise to the bathers—an important advantage in bad weather. The range for gentlemen is divided into 20 rooms; that for the ladies into 17. The reservoirs are walled and floored with brick and plastered with hydraulic cement. They are filled by siphons. In some of the apartments there are conveniences for shower and douche baths; and a few are fitted for administering artificially warm and tepid baths. The revenue from these baths, as also that at the Berkeley springs, accrues to the trustees, and is expended, in both places, on the improvements of the baths, grounds &c.

We may now return to the *Spring*. There is no analysis of these waters, nor does there seem to be any desire on the part of the trustees or the proprietors of the hotel, so far as I could learn, to procure one. The former have expended ninety thousand dollars on their buildings, and grudge one hundred dollars, or less, for an analysis. There is a very preposterous idea abroad, to which I have already alluded, that a mineral water must lose

confidence, unless it exhibit a large and diversified amount of mineral ingredients. I have exposed the fallacy of this opinion, and shown, that the very great freedom of some waters from mineral impregnation is the secret of their virtue. This is conspicuous in the Red Sulphur; and I have little doubt that to their purity the waters of Berkeley and Capon springs also are indebted for their admirable adaptation to several diseases. The spring discharges, probably, 100 gallons of water in a minute; its temperature is 66°. In the great reservoir, the temperature is 64°. The water is clear, light, pleasant and tasteless, except, perhaps, the slightest possible alkaline flavor. It probably contains carbonate of soda. Like the Berkeley water, it is delightfully soft, and leaves the skin with that delicate feeling of velvet, which evinces its power in softening and detaching the *epidermis*.

Large specimens of lithic acid gravel are shown, said to be discharged under their use. The Capon waters claim another and a singular power—the expulsion of *botts* from horses. The horse is exercised until he becomes very warm; he is then permitted to drink copiously of the water, which “*never fails*” to bring away those destructive animalculæ. Now, if these waters *do* possess this power, it would be highly interesting to know the cause of this anthelmintic property, as it may also prove efficacious in expelling those parasites that infest the human body.

To conclude my remarks on the Capon waters, I class them with those of Bath—the latter being perhaps more alkaline—certainly of higher temperature, and vastly more copious. I entertain a high opinion of both, and believe them very important curative agents.

CHAPTER XXVII.

THE WHITE SULPHUR SPRINGS.

(Continued.)

It will perhaps be thought that I have already said enough on the properties of this water; and I may incur the charge of tautology in the following remarks, yet there are some new views so blended with those already taken, that I find it difficult to separate them without re-writing the whole.

Referring the reader back to the fifth chapter and the analysis therein given by Dr. Hayes, and the observations accompanying it, it must appear that the great and active principle of the sulphur waters is the sulphur constituent, or the sulphureted hydrogen resulting therefrom, modified, however, by other constituents of those waters. This opinion is corroborated by the observation of all intelligent physicians who have noted the action of saline sulphur waters. As a fact, it is a starting point of great importance for tracing the effects on the human system of the different waters in which it is found. These effects will vary according to the different combinations with other gases and salts, and it will be found that an apparently trifling difference in those combinations will produce widely different effects.

It will be proper now to consider what is the character of sulphureted hydrogen, and how we are to class it as a remedial agent. In its effects on respiration, it would produce, in a concentrated form, as speedy death as prussic acid, according to

Liebig, "owing to its action on the compounds of iron when alkalies are present; and free alkali is never absent from the blood. It is powerfully sedative and narcotic, and these are the properties that give it value in the diluted and combined form which it takes in sulphur waters. It has been shown that it permeates every membrane and tissue of the system; and consequently, we may suppose that it modifies the condition of those membranes and tissues and that of the blood, and that the brain and the whole nervous system acknowledge its influence. We have now advanced two steps in explaining the probable action of sulphurous-saline waters; first, by ascertaining that their most active principle is hydro-sulphuric acid; and secondly, by establishing, on the best chemical authorities, that hydro-sulphuric acid is not irritating, but sedative, and powerfully narcotic. We must next consider it in combination with other gases and salts found in the different waters of this class, and how its action is modified by the quantity and arrangement of those other ingredients. We now however apply ourselves to the constitution of the White Sulphur water, reserving its comparison with the Salt Sulphur and Red Sulphur—the two waters of the class next in importance—to a more advanced portion of this report.

In approaching the spring, the odor of sulphured hydrogen is perceived at some distance—a circumstance which would induce us to suppose that the water is highly charged with that gas. But, analysis corrects this estimate of our sense of smell, and informs us, that the amount of this gas is very small compared with the other gases found in it, and, indeed, considerably below the quantity of the same gas found in other sulphurous waters in

the same region. The stronger odor may arise from one or more causes: 1st, the superficies exposed to the action of the atmosphere, which is much greater than at the other springs, since their streams are covered over; 2d, to its higher temperature, which is about 62° F.; 3d, to the small amount of oxygen, which causes it to part sooner with the sulphureted hydrogen; 4th, to the curious fact stated by *Fowne*, "that it is most offensive when in small quantity, when a mere trace is present in the air;" or, lastly, from a combination of some if not all of these causes.

Examining, now, the proportions of the other gases, we find the oxygen, as already stated, small in amount, the nitrogen about one-fiftieth of its whole volume, and the carbonic acid rather more than one-twentieth—all forming about one-fourteenth of its entire volume.

With regard to the nitrogen, oxygen and carbonic acid gases, we cannot doubt that they exercise a due share of influence on the action of mineral waters, though nitrogen is deemed rather negative as a remedial agent, since it is known to leave the system in the same quantity in which it is received. The carbonic acid, besides being necessary for holding in solution the alkalies of those waters, is probably influential also in modifying the action of the sulphureted hydrogen; at least, we see that waters possessing more sulphureted hydrogen and less carbonic acid than the White Sulphur, are more *narcotic*.

Having thus, briefly, and I fear unsatisfactorily glanced at the gaseous constituents of the White Sulphur, I pass on to its saline properties.

It has been seen that the sulphates of lime and magnesia form nearly ten-elevenths of the saline

matter of this water, and these are in proportion of, nearly, 67 of the former to 30 of the latter. The sulphate of lime may be considered an impurity more or less common to all springs in limestone regions. Waters containing it and the carbonate are harsh and produce purgation, and frequently dysentery, in constitutions not accustomed to them. The sulphate requires about 500 parts of water to render it soluble; it will therefore be seen that it appears in this water in quite a concentrated degree. It may be considered as irritant and stimulant.

The sulphate of magnesia, which is also abundant in this water, imparts to it most of its cathartic and diuretic effects, and may be considered its most important medicinal salt. We know that strong solutions of salts are not taken into the circulation, but act as stimulants to the intestines and produce purgation, whereas, greatly diluted, they are so taken up, modify the blood, and are eliminated in other ways from the system. The amount of carbonate of lime is inconsiderable, and such as is usually found in limestone springs, in which there is always carbonic acid present. The other salts—silica, potash, soda, magnesia, are found only in minute quantities. The organic matter, dried, and ranged with the salts, has already come under review.

From a view of the constituents of this water, we should infer that it is essentially aperient and diuretic, and that its alterative effects are mainly due to sulphureted hydrogen, and the organic substance which in its state of solution is taken up by the absorbents. Every tissue of the body is formed from the blood, and the blood itself is constantly undergoing changes, and modified by the elements conveyed to it. Keeping these facts in view, we

can readily imagine that subtle and sedative agents, like those we have described, *do* possess great influence in modifying the action of other ingredients in the same water. Perhaps I shall be thought to have dwelt too long on these matters, but it must be recollected, that I am treating of a water standing at the head of its class, and that having once considered and exhibited the principles common to the class, I will not be obliged to recur to them again.

SALT AND SWEET SULPHUR SPRINGS.

(Continued.)

The account given of the *Salt Sulphur proper*, and its action on the system, in a former chapter, was so full that little remains to be now said about it except incidentally. The Spring, however, denominated "*Iodine Spring*," has been invested with new interest in consequence of a recent analysis by a distinguished chemist, Dr. David Stewart, of Baltimore, which is now for the first time published.

IODINE SPRING No. 1, B.

Report of the Analysis of the Salt Sulphur (Iodine) Springs in Monroe County, Virginia.

Temperature $65\frac{1}{2}$ ° F. Reaction alkaline, spec. grav. 1002.7.

Each gallon of the water contains—

Sulphureted hydrogen, 19.19 cub. inches.

Carbonic acid, 34.60 " "

Also nitrogen and oxygen gases.

The saline contents of one gallon are—

Sulphate of magnesia,	-	18.20	grains.
Sulphate of soda,	-	22.36	
Carbonate of lime,	-	31.81	
Carbonate of magnesia,	-	06.60	
Chloride of magnesium,	-	00.26	
Chloride of sodium,	-	01.51	
Chloride of calcium,	-	00.57	

Solid contents of one gallon—*continued.*

Silicic acid,	-	01.75
Carbonate of potash,	-	02.35
Carbonate of soda,	-	10.70
Sulphate of lime,	-	74.20
Iodine,	-	00.59
Bromine,	-	00.60
Iron, with traces of phosphoric acid, lithia and alumina,	-	01.45
		<hr/>
		172.95
		<hr/>

The report No. 1, B, gives the direct results of analysis: the following are the relative proportions of the salts calculated by the law of equivalents; and it will be observed that they confirm the results obtained, as the *proportion* of each salt is nearly the same:

2 equivalents of sulphuric acid,	aa 40=80
2 " " " soda, aa 20=40	<hr/>
	120
	<hr/>
2 equivalents sulphuric acid,	aa 40=80
2 " " " soda, aa 32=64	<hr/>
	144
	<hr/>
4 equivalents carbonic acid,	aa 22= 88
4 " lime,	aa 88=112
	<hr/>
	200
	<hr/>
1 equivalent of magnesia,	20
1 carbonic acid,	22
	<hr/>
	42
	<hr/>

By the same mode the proportion of

Chloride of magnesia,	-	01.68
Chloride of sodium,	-	09.00

The following table gives the proportion thus obtained, and the relation of the total to one gallon of water:

One wine gallon of the water contains—

Sulphureted hydrogen,	-	19.19	cubic in.
Carbonic acid,	-	34.60	
Oxygen,	-	00.62	
Nitrogen,	-	04.73	
 Total gaseous contents,	-	<u>59.14</u>	<u> </u>

Solid contents of one gallon—

Sulphate of magnesia,	-	20	grains.
Sulphate of soda,	-	24	"
Carbonate of lime,	-	33	"
Carbonate of magnesia,	-	07	"
Chloride of magnesium,	-	00.28	grains.
Chloride of sodium,	-	01.50	"
Chloride of calcium,	-	00.56	"
Silicic acid,	-	01.76	"
Carbonate of potash,	-	02.33	"
Carbonate of soda,	-	10.80	"
Sulphate of lime,	-	68.00	"
Iodine,	-	00.63	"
Bromine,	-	00.65	"
Sesquioxide of iron,	-	01.06	"
Alumina,	-	00.18	"
Phosphate of soda and lithia,	-	00.73	"

D. STEWART, M. D.

Taking a comparative view of these adjacent Springs, we find there are seven ingredients in the Iodine Spring, which have not been detected (except a trace of iodine) in the Salt Sulphur proper, and some, if not all, medicinal agents of great value. Besides iodine and bromine, there are the carbonates of potash and soda, and alumina, with phosphate of soda. It will readily occur to the physician, who has to deal with a scrofulous constitution, in which the *vis vitæ* is impaired by complicated derangements, that a water, constituted as this is, gives his patient the best chance of relief. The great sedative power of its *extraordinary* amount of sulphureted hydrogen, the alterative effect of its

iodine and bromine on the glandular system, the efficacy of its neutral salts in promoting intestinal excretions, and its alkaline properties, all combined, make it a water of peculiar interest to the votary of medical science.

It is said of this water that it reduces the pulse. I have, myself, seen no case in which it has done so; but in cases *simulating* phthisis, in disease of the mesenteric glands, and in a dyspeptic condition, I can readily understand that it may have this effect. If, however, the opinion I have sought to establish respecting the stimulant property of saline waters be correct, this water is certainly not adapted to cases in which such an action would be hurtful. But, then again, whilst Prof. Rogers makes the sulphureted hydrogen in a wine gallon 3.46 cubic inches, Dr. Stewart makes it 19.19 cubic inches.

Now, if Dr. Stewart be correct, the fact that it reduces the pulse would go to corroborate the views I have taken of the sedative influence of this gas. By the analysis made by Prof. Rogers, we find that the Salt Sulphur far surpasses the White Sulphur and Red Sulphur—the White being only 0.271 cubic inches, the Red 0.397, while the Salt is (Rogers) 3.46 inches.

It will be recollected that while Prof. Rogers gives the analysis of the Salt Sulphur proper, he says it “applies to the New as well as the Old Spring.” There are other facts worthy of attention: the first is, that the other gases, as found by both chemists, are identical; and the second is, that in Dr. Stewart’s first report to Messrs. Erskine & Caruthers, this gas also is reported precisely what Prof. Rogers made it. Having noticed this remarkable discrepancy between the first and final reports of Dr. Stewart, and the identity of his first report with the

analysis of Prof. Rogers, as calculated by me for the quantity of a wine gallon, I supposed Dr. Stewart had made a mistake, and addressed him a letter on the subject. I received a prompt reply, from which I make the following extract :

BALTIMORE, 31st Dec. 1851.

DEAR SIR,

I thank you for the opportunity you have given me of addressing you with regard to the analysis of the Salt Sulphur Springs of Virginia. At the time I received the order for the analysis of the water, I also received four bottles: two precipitated with acetate of lead, and two without. Fearing that the precipitation in the former might be increased by the precipitation of the sulphuric acid of the sulphates, I estimated the sulphuric acid in each separately, and finding the amounts to correspond, was driven to the conclusion that Professor Rogers was wrong in his estimate, particularly as I had previously washed the sulphuret of lead with strong acetic acid, (and thus reduced its weight *nearly one-half,*) before making the estimate in the usual manner. Moreover, I discovered that my estimate was much less than the average of the Sulphur Springs of Europe, while *his* was less than the *least* proportion for which we have any good authority.

See "Dr. M. Gairdner's table of the quantity of sulphureted hydrogen in mineral waters," Pereira's Mat. Med. (Lea & Blanchard, 1846,) p. 257, vol. 1.

With respect to the discrepancy in Dr. Stewart's first and second reports, he accounts for it as follows: "N. B. The discrepancy between the former report and this one resulted from the precipitation of the sulphur from the sulphureted hydrogen."

With regard to the difference of estimate between himself and Rogers, (which, as I have already stated, varies, from Rogers 3.46, to Stewart 19.19 cubic inches,) he thus accounts for it:

"I feel confident that this spring is like the celebrated Cheltenham Spring *in this respect*, (as it is in many others,) viz: the proportions of gaseous contents *vary*, as I find the temperature of this Spring varies in a much greater degree; and I believe the

gaseous contents vary from the same cause." See same authority, (Pereira,) also *Materia Medica* by Edwards and Vaivaseur, translated by Togns & Durand, page 110.

Professor Rogers' *analyses* vary from 1.10 to 1.50 in 100 cubic inches; or, when calculated at 231 cubic inches, from 2.54 to 3.46. Now it is interesting that this gentleman also accounts for the variation in the same way that Dr. Stewart does. In his letter to Messrs. Erskine & Caruthers, accompanying his analysis, he says: "As from repeated examinations I have found some variations in the quantity of the ingredients, depending upon the seasons and weather, I have given you the average numbers deduced from many analyses. The greatest fluctuations having been observed in the amount of sulphureted hydrogen, I have stated the limits within which I have found it to range."

Having thus placed the *analyses* of those two distinguished chemists before you, and allowed them the benefit of their own explanations, I would remark, that the discrepancy between them as to the amount of this *gas*, is rather interesting as a question of chemical science, than as affecting the medicinal agency of the water, since according to the *minimum* estimate, it is, still, many times greater than the amount found in any of the other celebrated Springs in the same region.

I will now mention some of the cases in which the *Iodine Salt Sulphur* has been known to exert a peculiarly beneficial influence over and above those to which the *Salt Sulphur proper* is adapted. These are affections of the glandular system, bronchocele, secondary syphilis, mercurial rheumatism, the chronic exanthemata, scrofulous ulcers, dyspepsia, attended with acidity, diarrhoea, constitutional de-

bility—to which may be added predisposition to tubercular consumption; but when tubercles are in progress of deposition and development, it is an agent of doubtful expediency. Chlorosis and amenorrhœa are successfully treated by the use of this water. In hepatic disease, as also in enlargement of the spleen, and indeed, in almost all the diseases I have enumerated, under the head of the Salt Sulphur, it will be found efficacious.

It is also contra-indicated in nearly the same catalogue of diseases as that water.

SWEET SULPHUR SPRING.

North of the Iodine and Salt Sulphur Springs, and a few hundred yards from the hotel, is the Spring bearing the above name. It was the earliest improved and visited of the group, and had considerable repute. Bad management, however, brought it to neglect, and the superior accommodations, and perhaps the superior merit of the Salt Sulphur overshadowed it. It fell into disuse, and is now attached to the Salt Sulphur estate. This water is of lower temperature, and much more palatable, than either of its neighbors. I can furnish no analysis of it, but we know that, in sulphurated hydrogen, it is similar to the White Sulphur, and in saline ingredients, especially in the sulphates of magnesia and soda, it is far less impregnated than the Salt. It is therefore much milder in its action than the last mentioned water. There are many cases in which it would be more appropriate, and as a variety it gives no inconsiderable advantage to this watering place. When, for instance, the Salt Sulphur acts too freely on the bowels, this may be substituted. It supplies the bathing estab-

lishment, and is frequently drunk in preference to the others. I have myself always entertained a favorable opinion of the *Sweet Sulphur*, and have met with no water in the mountains that I consider approaches nearer the properties of the Red Sulphur.

RED SULPHUR AND BLUE SULPHUR.

To the account given of the former of these Springs in a preceding chapter, I have nothing to add; I therefore proceed to the consideration of the latter for the article on which and its analysis now for the first time published, I am mainly indebted to Dr. John A. Hunter, the resident physician, a gentleman of high standing in the profession, and of great experience in the use of this mineral water.

BLUE SULPHUR SPRINGS.

Temperature variable from 45 to 46°.

Solid matter procured by evaporation from 100 cubic inches weighed, after being dried, at 212°, 44.42 grains.

Quantity of each solid ingredient in 100 cubic inches estimated as perfectly free from water.

		In 100 cub. in.	In 231 cub. in.
Sulph. of lime,	-	20.152 grs.	46.551 grains.
Sulph. of magnesia,	-	2.760 "	6.375 "
Sulph. of soda,	-	7.021 "	16.218 "
Carb. of lime,	-	2.185 "	5.047 "
Carb. of magnesia,	-	0.407 "	0.940 "
Chl. of sodium,	-	1.868 "	4.215 "
Chl. of calcium,	-	0.005 "	0.011 "
Protoxide of iron rec'd from prot. sulph.	-	0.015 "	0.034 "
An azotised organic matter blended with sulph.	-	3.000 "	6.930 "
		<hr/>	<hr/>
		37.413 "	86.321 "
		<hr/>	<hr/>

Earthy phosphates, a trace. Iodine, a trace.

Volume of each of the Gases in a free state.

Sulph. hydrogen,	-	0.45 to 46	1.03
Nitrogen,	-	3.25	7.49
Oxygen,	-	0.56	1.29
Carb. acid,	-	2.75	6.35
Total cubic inches,		<u>7.01</u>	Total, <u>16.16</u>

In this analysis, the first thing that arrests our attention is the low temperature of the water—45° to 46°—by far the lowest of all the mineral springs that have come under review. This confirms the observation made by me on a former occasion, that a large draught of this water was apt to oppress the stomach. It may also serve to account for a fact stated by Dr. Hunter, which is directly in opposition to my own observations of the action of mineral waters in acute diseases—observations sustained, heretofore, by all the distinguished authorities on the agency of mineral waters. But one correctly ascertained fact is worth a thousand speculations; and this fact, resting on an authority so reliable as that of Dr. H., is highly important in estimating the value of this water. I give the result of his observations in his own words:

“The Blue Sulphur Spring, like the Salt and White Sulphur Springs, has generally been regarded as exerting a stimulating influence, consequently, like the two former, to have been contra-indicated in all acute and inflammatory affections. My close proximity to the waters of this fountain, and one other which I shall notice, does not allow me the expression of contra-indication. To the contrary, a large and full practice has given me the privilege of noting its use in inflammatory fevers; and with me it has been a grateful beverage, not increasing the inflammatory action or protracting a crisis. If the grade of inflammation be high, and there should exist a predisposition to congestion, its use should be preceded by blood letting.”

I have carefully considered the analysis, and looked for some probable cause of the agency ascribed to the water in fevers by Dr. H., and I can perceive nothing to render its action so different from

what has been observed in other waters of the same class. It is evidently an *intermediate* water between the Salt and White and the Red Sulphur, containing a little more sulphureted hydrogen than the latter, and exceeding it greatly in amount of saline matter, but yet in this last feature falling far short of the two former.

It is certainly, then, not as stimulant as the White and Salt, nor, if our theory be correct, as sedative as the Red Sulphur. Now, the temperature of the Red is 54°—8 or 9 degrees higher than the Blue—yet in fever I found it a decided stimulant, aggravating all the symptoms, and especially disturbing the head. I have thought, and still think the Red Sulphur the most dangerous of all those waters in a high and unsubdued type of fever, and have ascribed this (I think correctly) to the manifest narcotic influence of its sulphureted hydrogen, unchecked by any appreciable quantity of the neutral salts. While, therefore, the Red Sulphur is one extreme and the Iodine Salt Sulphur another, it is not improbable that a water constituted like the Blue Sulphur exerts a more refrigerant and sedative influence than either. As I have already remarked, in a state of convalescence I have found the Red Sulphur a most valuable auxiliary in the restoration of health; but all my experience of this and all the mineral waters tends to the conclusion that they are not suited to acute forms of disease.

Some years ago a theory was promulgated by the physician resident at the White Sulphur, that the sulphureted hydrogen gas was a "*nervine stimulant*," and that consequently it was proper to permit this gas to escape, and drink the water "*stale*." The author combatted this opinion, and insisted that the gas was strictly sedative, and that the stimulating

properties resided in the saline ingredients. Dr. Hunter, *stimulated* by this controversy, instituted a series of experiments, which he gives in a tabular form:

"I shall now proceed to show the effect of Blue Sulphur water on eight persons placed upon its use—selected from a large company, only one of which could be considered an invalid—with such directions as I knew would be strictly observed. I commenced by giving each a compound pill the evening previous to the commencement of the use of the water, noted the pulse of each, and ordered two glasses of water taken at the fountain before breakfast, three before dinner and three before supper; examined them, noted the effect, and ordered one glass after tea, with directions that the same course should be continued for eight days, which resulted as follows:

Age.	Natural.	PULSE.								
		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.	8th day.	
1st, 22	73	73	74	73	74	75	76	76	74	
2d, 21	74	76	73	73	75	76	74	74	75	
3d, 22	72	72	73	74	74	74	75	76	73	
4th, 31	70	77	76	74	74	74	74	74	75	
5th, 36	72	75	73	76	77	75	74	74	73	
6th, 30	71	71	71	75	72	73	73	73	73	
7th, 26	75	74	78	78	78	76	79	77	75	
8th, 27	73	72	74	75	76	74	75	74	76	

"With this result I was well satisfied, being fully confident that my directions were strictly observed, and that no omission or inaccuracy had been made to contra-induce correct data.

"I then placed the same number of persons on the use of the ungaseous water in their rooms for eight more days, preparing them for its use as I did with the first class, which resulted as follows:

Age.	Natural.	PULSE.								
		1st day.	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.	8th day.	
3d, 22	72	74	73	74	74	73	75	74	74	
4th, 30	73	74	73	74	75	73	74	73	74	
5th, 23	71	73	73	74	76	74	73	74	74	
6th, 21	74	74	73	74	74	75	74	76	75	
7th, 33	70	74	73	73	73	74	73	74	73	
8th, 38	73	76	75	75	73	76	75	77	74	
9th, 39	74	76	74	74	75	76	73	73	74	
10th, 26	73	73	73	76	75	74	75	76	75	

From these facts you may see the relative claims of the disputants, in regard to the stimulating power of the gases.

I am satisfied that the slight difference manifest is the result of the alterative action going on—such a phenomenon taking place in the animal economy being impossible without changing slightly the general equilibrium ; and further, that the first class using the water, with its gases fresh from the spring, gave more decided evidence of its alterative effect than those who used it stale ; and it may be right to add, that the better the alterative effect, the less evident the general or local excitement—nay, that this effect not unfrequently takes place without the least disturbance.

So the conviction forces itself upon me, that whatever stimulating effect these waters may have, it should not be ascribed to its gaseous contents, and that all indications resulting and evidenced by the vascular system, or nervous system, is the result of their alterative action.

It would have been more satisfactory had Dr. H. extended his experiments to cases of disease. We know that the condition of health resists agencies which in cases of morbid action would produce very decided effects. Thus, half a grain of calomel might cause no perceptible change on a healthy secretion, yet a very marked one on a depraved secretion. The Red Sulphur water, so remarkable for reducing an abnormally excited pulse, seldom has any effect on the natural pulse. Yet the experiment is valuable, so far as it goes, and fully sustains the conclusions drawn from it, that a sulphur water is not more stimulant in its gaseous than ungaseous state.

I now, in conclusion, give the diseases to which

the Blue Sulphur water is applicable, according to Dr. Hunter's report, and am happy in bearing testimony to the reliability of opinions flowing from a source so highly respectable.

CHRONIC DISEASES.

"In this class of diseases there are no agents so potent as mineral waters, and none from which relief may be more confidently expected. I shall now briefly refer to the applicability of the *Blue Sulphur* water to chronic diseases.

"1st. *Nervous Diseases*, under which head may be classed hypochondria, hysteria, catalepsy, chorea; their dependence on disordered digestion points this water out as a valuable agent.

"*Chronic Hepatitis*.—In whatever form this disease presents itself, either in tissue or secretien, this water forms a most invaluable remedy; its power as an emulgent and as an alterative upon the liver, in some instances, is astonishing—the icterode appearance of the skin rapidly fading, the secretions changing, and the digestion strengthening. In connection with chronic hepatitis, I may class jaundice & splenitis.

"*Amenorrhœa, Irregular Menstruation, Dysmenorrhœa*.—In these three types of uterine disease, I have had, in connection with the use of this water, the best results; nay, the repetition of cures coming directly under my observation, warrants me in recommending the use of the water with confidence.

"*Chronic Disease of the Urinary Organs*.—In calculous affections I doubt the utility, as almost all acid calculous affections require a greater amount of alkalinity than our spring possesses; consequently, the remedial effect is equivocal; yet in all the chronic irritations of the mucous membrane of the kidneys, bladder, prostate gland and urethra, their value is unquestionable.

"*Chronic Diseases of the Skin*, particularly that class of scaly disease, (order squama,) when the opaque and thickened laminæ of the cuticle are a product of inflammation in the true skin over which they are found, and not unfrequently in the slighter forms of psoriasis, the cuticle alone, or the *rete mucosum*, appears to be in a morbid condition.

"In the variety of disease, including lepra, psoriasis, pityriasis and ichthyosis, I have known, under my supervision, the greatest advantage, and witnessed results from the use of the water, conjoined with the baths, rare and unexpected. I may here add that this spring has attached to it the best bathing establishment (artificial) in the mountains, consisting of shower, warm and tepid baths, medicated and vapor."

CHAPTER XXVIII.

SWEET SPRINGS.

The distinguishing characteristic of this water is carbonic acid gas. How is this acid generated in such quantities? Liebig accounts for it by the proximity of wood coal formations. He says:

"The peculiar process by which the decomposition of these extinct vegetables has been effected, namely, a disengagement of carbonic acid from their substance, appears still to go on at great depths in all the layers of wood coal. At all events, it is remarkable that springs impregnated with carbonic acid occur in many places in the country between Meissner and the electorate of Hesse, and the Eifel, which are known to possess large layers of wood coal. These springs of mineral water are produced on the spot at which they are found—the springs of common water meeting with carbonic acid during their ascent, and becoming impregnated with it.

"Springs of water impregnated with carbonic acid occur at Schwalheim, at a very short distance from the layers of wood coal at Dorheim. M. Wilhelmi observed, some time since, that they are formed of common spring water which ascends from below, and of carbonic acid which issues from the side of the spring. This same fact has been shown to be the case in the famed Fachinger Spring, by M. Schapper.

"The carbonic acid gas from the springs in the Eifel is, according to Bisehoff, seldom mixed with nitrogen or oxygen, and is probably produced in a manner similar to that just described. At any rate, the air does not appear to take any part in the formation of these acidulous springs. The carbonic acid has evidently not been formed either by a combustion at high or low temperatures; for if it were so, the gas resulting from the combustion would necessarily be mixed with four-fifths of nitrogen, but it does not contain a trace of this element. The bubbles of gas which escape from these springs are absorbed by caustic potash, with the exception of a residuum too small to be appreciated."

Now the verification of this single theory of the existence of wood coal in the neighborhood of the Sweet Springs, as the source of its carbonic acid gas, would be worth the salary of a geologist. It would be a source of wealth and comfort to an ex-

tensive and important territory. But why talk of treasures lying buried in the depths of the earth, when, for generations, there have lain exposed to the public gaze millions of loads of one of the most fertilizing deposits of lime from this celebrated spring? In its track down to the Red Sweet may be seen immense masses of *tufa*, a substance quite as easily crushed as gypsum, and equally fertilizing. Thus it is that the advantages of our state are overlooked, and its sources of prosperity and comfort neglected.

The medicinal properties of the Sweet Springs will be considered in connection with those of the

RED SWEET SPRINGS.

In the same lovely valley, and at the distance of one mile, there issues from beneath a bank of rock covered with *tufa*, three large springs known as the Red Sweet Springs, and so called from the ferruginous deposit made by two of them, the upper one approximating more closely the Sweet Spring waters. These waters are conveyed to two baths arranged like those of the Sweet, but not so spacious nor so limpid. At the distance of some 400 yards there are other springs similar to those of the Sweet, which are very copious, and which the proprietors have converted into baths.

I now ask attention to the analysis of these waters and the brief remarks I deem it necessary to make on them as remedial agents.

Comparative Analyses of the Red Sweet and Sweet Springs.

RED SWEET.

1st. Solid matter procured
by evaporation from
100 cubic inches, 40.76

SWEET.

1st. Solid matter procured
by evaporation from
100 cubic inches, 32.67

A portion of this is combined with water.

RED SWEET.	SWEET.
2d. Quantity of each solid ingredient, estimated as perfectly free from water, in 100 cubic inches.	2d. Quantity of each solid ingredient, estimated as perfectly free from water, in 100 cubic inches.
Sulphate of lime, 14.233	Sulphate of lime, 5.703
Sulphate of magnesia, 3.107	Sulphate of magnesia, 4.067
Sulphate of soda, 1.400	Sulphate of soda, 2.746
Carbonate of lime, 9.411	Carbonate of lime, 13.013
Carbonate of magnesia, 1.166	Carbonate of magnesia, 0.357
Chloride of sodium, 0.037	Chloride of sodium, 0.060
Chloride of magnesium, 0.680	Chloride of magnesium, 0.136
Chloride of calcium, 0.010	Chloride of calcium, 0.065
Sesquioxide of iron, 0.320	Peroxide of iron, (sesquioxide,) 0.061
Organic matter, in small quantities.	Silica, 0.075
Iodine, a mere trace.	Earthy phosphate, a trace.
The iron is no doubt dissolved in the water as a carbonate.	
3d. Volume of each of the gases contained in a free state in 100 cubic inches of the water.	3d. Volume of each of the gases contained in a free state in 100 cubic inches of the water.
Carbonic acid, 46.10	Carbonic acid, 37.17
Nitrogen, 2.57	Nitrogen, 1.87
Oxygen, .20	Oxygen, a trace.
Sulphureted hydrogen, a trace too small to be measured.	Sulphureted hydrogen, a trace too small to be measured.
4th. Composition of 100 cubic inches of the mixed gases rising in bubbles in the spring.	4th. Composition of 100 cubic inches of the mixed gases rising in bubbles in the spring.
Nitrogen, 62.5	Nitrogen, 71.7
Carbonic acid, 37.5	Carbonic acid, 28.3

The *analyses* given above were made by Professor Wm. B. Rogers, and are, I presume, correct. Assuming this to be the case, they furnish data on which may be founded a theory regarding those effects which I know by experience they produce on the human system.

It will be seen that the salts and gases in both waters are identical in kind, but vary in proportions. Both are more abundant in the Red Sweet, and this corresponds with our knowledge of its

power as a stimulant, and we perceive that it contains four-fifths more iron, which accounts for its higher tonic effect. To hold this iron in solution it was probably necessary it should contain more carbonic acid, and we accordingly find it in the proportion of 46.10 to 37.17. This excess of carbonic acid makes it also more exhilarating, and causes the several salts and the iron to be better tolerated by the stomach. In the Sweet Springs, the carbonate of lime is more abundant, while the sulphate of lime exceeds in the Red Sweet. The sulphates of magnesia and soda are more abundant in the Sweet, making it, as we find it to be, more of an aperient than its neighbor. As a diuretic, the Sweet is known to possess more power, and this probably arises from the smaller amount of the peroxide of iron. While, therefore, both these waters are readily recognized as belonging to the same class, the medical man will understand that the difference of combination gives to each its own peculiar advantages, and that according to his diagnosis, there is a choice between them. If he desires a gentle aperient or diuretic effect, he will prescribe the Sweet; if he requires more of an astringent and tonic, he will direct the Red Sweet. Now, both of these waters are decidedly tonic, but the Red Sweet greatly surpasses in this respect. Yet, there are many cases in which the milder tonic, aided by the more aperient and diuretic qualities, is preferable. It requires a nice discrimination, frequently, to advise between them; but the profession will be enabled to recognize the distinction. If in chlorosis, anemia, uncomplicated debility, impotence from youthful excesses, and other conditions, you wish to introduce iron into the system, for a considerable length of time, without risk of its disagreeing with the sto-

mach, then, with confidence, prescribe the Red Sweet. It is certainly a most powerful agent in such cases. In the milder cases, and for the reasons already stated, we should give preference to the Sweet Springs. In thus speaking of the prescription of these waters, I desire to be understood as combining the bath with the internal use of the waters. I am not prepared to say whether as a bath one water has any superiority over the other: It would depend on whether the amount of absorption through the cutaneous system is appreciable in a cold bath during the short stay which is necessarily made in it. I am inclined to think it is not; yet, whence proceeds the extraordinary exhilaration that succeeds these baths, when adapted to the case? A bath of plain water of the same temperature will not produce the same effect. We must infer, by analogy from its internal effects, that the carbonic acid has much to do with it, whether by absorption or mere contact with the cutaneous nerves, we know not. It may be possible, too, that the iron contributes to the same effect. However produced, I am inclined to believe, from some experience of both baths, that the Red Sweet possesses more power as an exhilarant and tonic. There is a difference of 3 or 4 degrees in their temperature. The Sweet being $74\frac{1}{2}$, the Red Sweet 78° . This is in many cases an important difference, and will not be overlooked by the intelligent physician.

It will be interesting to those who visit the Virginia Springs, to learn that the Sweet Springs have passed by purchase into the hands of Oliver Beirne, Allen T. Caperton, John Echols and Christopher J. Beirne, Esquires, and that arrangements are in progress to improve this valuable watering place in a style commensurate with its merits. Next season,

everything about the establishment will be new and of the best quality. The great hotel will be finished and completely fitted up. From 4 to 8 two-story houses of 8 rooms each will be added to the means of accommodation, and by the summer of 1854 the improvements will be of an extent and character not surpassed in this region.

The Red Sweet Springs also, are, I learn, become the sole property of Mr. Bias, who is already favorably known to the public.

HOT SPRINGS.

The class of remedial agents I am now about to consider is so important, and yet so liable to be abused, that I will perhaps be pardoned for going somewhat into detail. Short of Arkansas, there is I believe no other spring in the United States, as yet known, that exceeds or equals in temperature those at the head of this article. They therefore deserve especial attention.

For a general description of the Springs and some of their therapeutic properties, as also for the analysis by Prof. Rogers, I refer the reader back to the 17th chapter of this work.

For convenience of reference, I give below the ingredients calculated for a wine gallon, or 231 cubic inches :

Nitrogen,	:	2.67	cubic inches.
Oxygen,	:	0.52	" "

Saline ingredients in a wine gallon :

Carbonate of lime,	:	17.40	
Sulphate of lime,	:	5.48	
Sulphate of soda,	:	3.64	
Sulphate of magnesia,	:	2.05	
Muriate of soda,	:	1.33	
Silica,	:	0.18	
		30.08	grs.
		<u><u> </u></u>	

An inspection of the tables given above will satisfy the reader that the gaseous and mineral impregnation of the Hot Springs is very moderate. It may therefore be inferred that its medicinal agency, when externally applied, is mainly, if not altogether, ascribable to its temperature. It has been seen that, with the exception of carbonate of lime, the saline contents are trifling; it is therefore to be reckoned a pure water, and, independent of temperature, would rank as a sedative, and as such, when suffered to cool, might be used with advantage internally, where sedative waters are indicated. But when we regard its temperature, we are obliged to place it in the class of stimulants. It would answer no good purpose to enter upon an argument to prove that, in ordinary cases, a bath even at 100° Fahr. acts as a stimulant to the cutaneous surface, and that this stimulation is propagated through the whole organism. The experiment is one easily made. Let an individual in good health and with a pulse at 76, enter a bath considerably above the temperature of the body. After he has been immersed some ten or fifteen minutes he will find his pulse accelerated, veins turgid, capillaries engorged, face flushed and the brain excited. Immersion in the pool of 106° at the Hot Springs will ordinarily raise the pulse from 76 to 106 in 15 minutes; in some cases it will reach 120. The Wisbaden bath at 110° has raised the pulse to 130 beats. All this goes to demonstrate that the hot bath is an agent of great power, and not to be tampered with without judicious advice.

But many who visit this as well as other watering places, think themselves quite competent to manage their own cases, or are deterred by various circumstances from consulting a physician. The

agency of a hot bath is one, too, which the educated physician at home can much better decide upon than that of the drinking waters; and if he has studied the constitution and pathological condition of his patient and the usual effects of this agent, he can prescribe with a good prospect of success. It is to aid him in this particular that I throw out some general suggestions. In the first place, *preparation* is necessary. Is the patient laboring under arterial excitement? This should be brought down by suitable depletion. Is the liver torpid? are the bowels constipated? is the tongue furred? are there any evidences of cerebral or nervous excitement? In all such contingencies, the bath should be abstained from until the normal condition is restored. As a general rule, the alimentary canal should be evacuated, and the liver stimulated to energy by a little calomel or blue pill. Injections, too, of the water, will aid greatly in the preparation, and if used habitually, before every bath, would be productive of much good. Supposing all these precautions taken, the next consideration is the selection of temperature. What Dr. Goode denominates the *temperate bath* is 100°. This is the lowest, but strictly speaking, this is only comparatively temperate. It is in reality a hot bath. To this are usually consigned, and with great propriety, the *new comers*. The experiment with this is much safer than with the higher temperature, though there are cases in which even this is too stimulant; and I think it is much to be regretted that the temperature of 98°, which existed here some years ago, has not been preserved, instead of blending it with another of higher temperature, and thus making their joint temperature 100°: 2° in the ascending scale make an important difference.

in bathing. Indeed, the proprietor would do well to arrange here, as might easily be done, baths ranging from 90° to 106° , his highest temperature. After a few days' bathing in the "temperate bath," the patient is next directed to the "hot spout bath," temperature 106° , or to the boiler, 106° . In the latter he is immersed from 10 to 15 minutes, comes out, is wrapped up and covered closely with blankets, and undergoes the sweating process from 40 to 60 minutes. He is then *unpacked*, rubbed dry, and resumes his clothing. While in the bath he usually takes one or two tumblers of the hot water. In the hot spout, his main object is to direct the stream to the affected organ, such as the liver or spleen, and thus secure a local mechanical action aided by a high temperature. In engorged conditions of the liver, in indurations of this and the spleen, and in local rheumatic affections, it is sometimes surprising how promptly this *douche* gives relief. In all of the baths, the usual period of immersion does not exceed 15 minutes. In my opinion, half the time at first would be more profitable. At a more advanced period of bathing, the patient may remain in longer. It would be well enough to watch the effect on the pulse and the appearance of the face, and to be governed accordingly. After the continuance of these baths for several days, sooner with some, later with others, there is what in many cases proves a crisis, but which should be watched with care. It may be necessary to bleed or give a mercurial pill to relieve the system at this period, and abstinence from bathing, until the object is effected, is important. With simple directions like these, the family physician might instruct his patient whom he is sending to the Hot Springs; and if faithfully followed, and

this agent be the proper remedy, he may look for success. But let him see to this—that his diagnosis justifies the use of this powerful agent, else he may inflict upon the invalid irremediable evil. There are cases at these waters sometimes, we know not whether by medical advice or not, that had better be any where else ; they are disappointed, and go away cursing the water, instead of blaming their own empiricism. I shall give some of the cases in which the Hot Springs are beneficial, as well as those in which they are contra-indicated, and shall be happy if the distinctions drawn shall lead to a more correct appreciation of an agent no less potent for mischief when misunderstood and abused, than for good, when properly prescribed and applied. First, then, of that disease so common in our variable climate, which clings to the unhappy being it has once seized like the shirt of Nessus, and often, in the prime of years, brings on the helplessness and decrepitude of old age.

Rheumatism.—Of which the writer may well say :

“Quorum pars magna fui.”

It need scarcely be said that in acute rheumatism this water is contra-indicated. It is only when the disease has become chronic, and the system is rather tending to atony, that these baths can be used with advantage. In the *sequelæ* of acute rheumatism, when by a bold depleting practice we have reduced the system below par, for the security of the centre of the circulation, or some other object, the Hot Springs judiciously administered are highly valuable ; but if the heart has become involved in the attack, let the physician be cautious how he advises this remedy. In chronic muscular rheumatism, caused or attended by deficient inner-

vation; in rheumatism of the joints, when there is a tendency to, or even partial *ankylosis*; in *sciatica*; in *lumbago*; in local paralysis—this is, unquestionably, an agent of great value under proper regulations; but it is far from being an agent of such general application as is supposed, and as I have had occasion to show, there are cases of rheumatism in which the warm, the tepid, and even the cold bath are more appropriate and successful. *Neuralgia* is sometimes relieved, and frequently aggravated by the hot bath. It is difficult to tell what will be its effect without actual experiment.

With respect to bathing in neuralgia, there are cases in which, like rheumatism, the hot bath will yield relief; but there are others in which it is calculated to aggravate the evil, and in these cases the warm; tepid or cold bath will be generally found useful. The Healing Spring, 84°, or the Berkeley Springs, 74°, are the waters I would recommend in those cases of neuralgia attended by arterial excitement. The waters of the Sweet and Red Sweet Springs are too stimulating.

Gout.—This is another disease—cousin-german to the two preceding—in which the hot bath is often used with advantage. In atonic gout, and in the irregular or retrocedent form, it is useful in bringing the diffused virus, if such it may be called, to a “local habitation and a name,” just on the same principle that a hot *pediluvium* would be used. In this the Hot Springs usually succeed, and the heavy fall of the douche will contribute largely to the effect desired. I need not repeat that in this disease also much attention is necessary to the general habit of the individual, and that sanguineous, plethoric persons may, by imprudent use of the hot bath, be driven into a state of apoplexy or paralysis.

Paralysis.—Idiopathic paralysis is evidently not to be treated by hot baths, and consequently, the use of the Hot Springs is contra-indicated. But in that condition of the limbs consequent upon rheumatism, as in all modifications of it, the Hot Springs are an agent of justly high repute. The remark made with respect to idiopathic paralysis will, *a fortiori*, apply to apoplexy and idiopathic epilepsy, in all of which the Hot Springs would be hurtful.

Affections of the Liver.—Engorgement and induration of the liver are conditions in which the hot douche has been eminently successful. The most unpromising cases too, are those in which it seems to have the most prompt effect. In these cases, usually treated with mercury before they reach the Hot Springs, the mechanical action of the douche combined with the high temperature, seems to be necessary for emulging and softening the organ. Then the use of mercury comes in with great advantage as an auxiliary, and the Sulphur waters complete the cure. This should be the routine in *bad cases*; but in lighter hepatic derangements, and in the jaundiced condition, the blue pill and Sulphur waters first, and then the hot bath will be the proper course. The same remarks apply to an indurated *spleen*.

Uterine Diseases.—Uncomplicated amenorrhœa, chronic suppressed menstruation, dysmenorrhœa, are judiciously treated, by alternating the Hot Springs and Red Sulphur. Fluor albus, chlorosis, menorrhagia, vicarious menstruation, scirrhus of the uterus, are all contra-indicated.

Sprains, dislocations, old injuries, deafness from hardened or defective secretion, scrofulous enlargements, cutaneous diseases, especially elephantiasis and *lepra*, derive great benefit from the Hot springs.

In *phthisis* and every form of tuberculous disease these waters are contra-indicated.

Thus have I endeavored to throw all the light in my power on the correct use of the Hot Springs. The high estimation in which I hold them may be gathered from my remarks; yet I do not think them a *panacea*, but, on the contrary, of a limited range of application.

WARM SPRINGS.

I have received from Dr. Aug. A. Hayes, of Boston, his analysis of this water. His results differ materially from those found by Prof. Wm. B. Rogers in 1835, which has already been given in chapter 16 of this work.

Analysis of the Warm Spring Water of Virginia.

In physical characters, this water resembles ordinary chalybeate waters. Recently drawn, it is clear, colorless, and in some degree sparkling, when agitated. Its taste is styptic or ferruginous, leaving the impression of a large amount of mineral matter being present. Agitated in the atmosphere, it becomes turbid and deposits in filaments an ochry matter, consisting of oxide of iron and organic matter.

The dissolved gaseous matter is carbonic acid, with nitrogen; no oxygen is present. By heat it is rapidly changed, the deposit of ochry matter increasing in density, while gas is disengaged.

A standard gallon of this water, weighed at 60° Fahr. afforded the following proximate constituents:

1st:	Sulphuric acid,	-	-	9.443
	Carbonic "	-	-	9.210
	Silicic "	-	-	0.990
	Organic "	-	-	1.525
2d bases:	Potash,	-	-	0.741
	Ammonia,	-	-	0.110
	Lime,	-	-	8.906
	Magnesia,	-	-	0.444
	Protoxide of iron,	-	-	0.973
	Alumina,	-	-	0.290
				32,632 grains.

The change produced in this water by exposure to air or by heating it, indicates that the protoxide of iron exists in the water

united to organic acid. When silver salts are mixed with the freshly drawn water, the decomposition which follows is not attended by the coloration which humic and apocrenic acids produce. The deposition, too, is largely mixed with oxide of iron: these, with other considerations, induce me to state that the protoxide of iron is united to crenic acid. In the further apportioning of the bases, by which we theoretically make up the salts supposed to exist formed in this water, the magnesia and alumina are combined with hydrous silicic acid, to form a compound soluble in carbonic acid and water. The remaining bases then constitute salts, which through the influence of chemical affinities are:

Sulphate of potash,	-	1.371
“ ammonia,	-	0.369
“ lime,	-	14,531
Carbonate of lime,	-	5,220
Crenate of iron,	-	2,498
Silicate of magnesia and alumina,	-	1.724
Carbonic acid,	-	6.919
		<hr/>
		32,632 grains.

In the preliminary examinations of this water, it was deemed remarkable that so small a weight of iron salt should impart so sensibly a chalybeate taste to so large a volume of water. Neither the carbonate nor sulphate of iron has this effect, and the only explanation is that alluded to above—the existence of a crenate dissolved in carbonic acid, so as to form an acidulous water. This compound, with the lime salts, may be considered as the active medicinal parts of the water.

BOSTON, 23d Feb. 1852.

DEAR SIR,
With this you have the results of analysis of the Warm Spring water. You will notice that no chlorine appears in the Warm Spring results. It is not present excepting in 2 gallons. I got about 0.007 grains, a curious matter, for rain water even contains more.

With high respect,

A. A. HAYES.

Dr. Wm. Burke.

Dr. Hayes analyzed the water in Boston; this will account for the absence of sulphureted hydrogen from his results, as no doubt it had escaped before the water reached him.

In the constituents of the water and their arrangements there is a striking difference, leading to the conclusion that our profession is not the only one in which there are uncertainties. Both che-

mists, however, make the water a comparatively pure one in respect to earthy matter; and in waters of this class which, as hygienic agents depend principally on temperature, it seems of little consequence what may be the precise saline constituents. Mr. Rogers gives the *amount* 23.706 grains; Dr. Hayes, 32.632 grs. The saline matter in the Hot Springs, according to Rogers, is 30.08 grains. Now, it is highly probable that there is no material difference in the constitutions of the Warm and Hot Springs, except their temperature, and the existence of a small amount of sulphureted hydrogen and iron in the former. Although this difference of temperature extends only to the apparently inconsiderable amount of eight degrees, yet in the progress of this review we will see it conduced sometimes to results entirely opposite in a remedial point of view.

It is difficult to assign precise limits to the classes of temperature. They have been arranged differently by different writers. Perhaps the following is as convenient as any other: cold, from 44° to 74° ; temperate, 74° to 84° ; tepid, 84° to 94° ; warm, 94° to 98° ; hot, 98° to 212° . The temperature of the human body ranges from extremes to centre, between 94° and 98° , and I have therefore assigned to this the designation of warm; if, however, as in the case of the horse's tail, we were gradually to take away a fraction of a degree, and then another, and another, it would require the tact of a wine-bibber to tell where one class ended and the other began. Fortunately, however, extreme nicety is not important. The temperature of the great reservoir at the Warm Springs varies from 96° to 98° —the higher being found where the water bubbles up from the ground, and the lower near the edge of the pool.

All I have said in treating of the Hot Springs, relative to preparation, is applicable here: the tongue should indicate a good condition of the abdominal viscera, and the alimentary canal should be evacuated. Any excessive action of the arteries should be reduced by depletion, and the baths would be judiciously preceded by one or more copious *lavements*. I repeat here that this is a means of using the thermal waters, which, however neglected, is yet a most important hygienic adjvant. Having thus prepared for the bath, we should enter it slowly and quietly, using as little exertion as possible. Most persons plunge in head foremost, and swim about until they are exhausted. A healthy person may bear this; an invalid *cannot* with impunity. My advice is of course intended for the latter, and I would therefore urge upon him the propriety of remaining perfectly still while in this bath. I directed my servant to pour on my head cold water very slowly, while immersed up to my neck. In this case it was done with a pitcher, but a watering pot would be much better.* This is delightfully refreshing, and will enable the bather to remain in much longer. I commenced with fifteen minutes, and gradually increased the time to an hour, and I feel perfectly satisfied that the quiet bath I speak of, with the shower on the head every ten minutes, might safely be extended to two hours or longer. We read of five hours being spent in some of the German baths; but the Germans are fanatics in most things, even to a love of the *piles*. There cannot be a doubt but that the *legitimate* action of a warm bath is as a sedative, whereas that of a hot bath is as a stimulant. The same result as to therapeutic agency may be obtained by

judicious management from principles entirely opposite. This is no new doctrine:

“Non meus hic sermo est, sed quem præcipit Ofellus.”

The stimulant action of the hot bath will in many cases be more prompt; but then it is also more attended by risk: the agency of the warm bath, though slower, will be generally as sure, always safer, and often more efficient, for it has a much more extensive range of applicability. Now as to the time to be spent in the different classes of temperature, it is scarcely necessary to say to a professional man that it should be regulated in special cases *pro re nata*; but it admits also of being conducted on general principles, and therefore it is that I desire to give the uninitiated such views as may be useful to them when deprived of reliable medical advice. I think then that, as a general rule, the cold bath, ranging from 44° to 64°, should be used only as a shower or a plunge; from 64° to 74° it will admit of a stay of from five to fifteen minutes, especially if exercise is taken in the bath. From 74° to 84°, fifteen minutes would perhaps answer well. From 84° to 94°, fifteen to thirty minutes; and from 94° to 98°, twenty minutes to two hours. Ascending above the temperature of the body, we must again diminish the time. From 98° to 100°, fifteen to thirty minutes; from 100° to 106°, our highest Virginia temperature, five to fifteen minutes. If the system is properly prepared, and the duration of time gradually extended to the maximum, in the warm bath, the advantages are obvious: the outer layer of epidermis is softened and detached, the exhalants are enabled freely to throw off the effete matter, and the absorbents to supply the blood with a modify-

ing principle in the medicated water. The German physicians, in their transcendentalism, would call it a vital principle; but in the eye of common sense, it is nothing more nor less than a chemical modification of the vital fluid by which the different tissues are nourished and supplied with renovating materials according to their respective necessities. It is thus that mineral waters act, whether taken internally or applied to the external surface. If they be nearly pure gaseous waters, we will find them acting according to the quality of the predominating gas; if that gas be sulphureted hydrogen, it will act as a narcotic sedative; if carbonic acid, it will act as an exhilarant and stimulant. If a large amount of the carbonates, &c., be held in solution by means of carbonic acid gas, and these, either through the exterior or interior membranes, obtain admission into the circulation, then we will find a corresponding increase of stimulating power. We can now see why the Warm Springs water is more generally sedative than the Hot Springs: first, its temperature is lower; second, it contains less insoluble earthy matter; third, it is more aperient; fourth, it contains the modifying principle of sulphureted hydrogen gas. We have seen that the great reservoir contains over 43,000 gallons of water, which rises from the earth in the space of an hour, accompanied by innumerable bubbles, nine-tenths of which, according to the chemist, consist of nitrogen gas. Now, as these bubbles reach the surface, their contents mingle with the atmosphere and the vapor arising from the spring. Besides this large amount of nitrogen gas, the quantity of sulphureted hydrogen is by no means inconsiderable. It appears that in 231 cubic inches, or a wine-gallon, there

are twenty-five hundredths of a cubic inch; consequently, in 43,000 there are 10,750 cubic inches.

This gas is also constantly discharging itself into the atmosphere over the pool. This subtle gas is inhaled in minute quantity with the atmospheric air, and is carried directly into the circulation by the cutaneous absorbents, and we may readily infer that it exercises an important influence over the dermis, and acts as an alterative to the whole system. I draw other inferences from these facts, and think they are sustained by experience. These are, that an atmosphere thus charged with vapor mingled with irrespirable gases would be unfavorable in a diseased condition of the respiratory organs. It is very curious and instructive to note the difference of effect between carbonic acid when inhaled and taken into the stomach. In one mode it becomes a poison to animal life, in the other a delightful exhilarant and tonic; and we have reason to believe that the latter effect is also derived from its absorption by the cutaneous surface. These remarks are applicable also to sulphureted hydrogen. With respect to nitrogen, constituting as it does nearly four-fifths of our atmosphere, and being found always in the same ratio to oxygen, it can have no deleterious property. It is present in small but variable amount in water. In some of the waters of which we have been treating, it is in the following proportions in a wine-gallon: Salt Sulphur, 4.73; White Sulphur, 4.680; Red Sulphur, 6.916; Warm Springs, 3.25; Hot Springs, 2.67. It might be curious to experiment with waters containing different proportions of this gas, as to their effects in favoring nutrition. Is it not probable that it has the same effect as in nitrogenized food? In looking over the above amounts

we were struck with the excess in the Red Sulphur water; and connecting this with the rapid gain of flesh that sometimes takes place while using that water, the idea has suggested itself that it may in some degree be ascribable to this gas; and moreover, that by invigoration of the nutritive process, the blood of phthisical patients is supplied with more healthy material. If this theory has any foundation, nitrogenized food is the most conducive to the recovery of such patients, and the practice of reducing the volume of blood by direct depletion should be resorted to with great caution. We ask pardon for this digression. Nitrogen is not absorbed from the atmosphere in the vital process, according to Liebig, and the part it principally performs is, doubtless, in promoting nutrition. Another inference I draw from the constitution of the Warm Springs water is, that it possesses great advantages and powers over cutaneous disease. The temperature is such as to admit of a long stay in the bath, by which the scarf skin is thrown off, and the true skin gets the full benefit of the sulphurated hydrogen, which is also carried into the circulation. The value of this agent in diseases of the skin is well known. These considerations lead me to advise that persons laboring under pulmonary disease be not sent to the Warm Springs, and to express my belief that after a course of drinking the sulphur waters, it affords the best prospect of curing the *exanthemata*, generally.

Satisfied that in many cases, cutaneous and rheumatic ones especially, much advantage will be derived by a prolonged stay in this bath, I should like to see arrangements made to facilitate this object. In lumbago, sciatica and other rheumatic affections of the lower portion of the frame, the *sitz*

or sitting bath is desirable. As in Germany, the patient furnished with a loose robe might sit from one to two hours, a little additional covering, if necessary, being thrown over his shoulders. If the arms or upper part of the body required the bath, this too might be obtained by *douche* or immersion. Some distance below the great bath, there are two spout baths of somewhat lower temperature. Attached to the great bath there is also a reservoir about 10 by 15 feet, containing *cold water*, and used in the Russian fashion, after emerging from the warm bath. When first introduced, prejudices existed against this sudden transition, but actual experiment has overcome that prejudice, and it will be well if a practice, unquestionably salutary in many cases, does not become abused. In organic disease, and in very feeble constitutions, such an experiment may prove hazardous if not fatal. In persons of ordinary stamina, it will greatly and rapidly invigorate the system. I have seen it carried to a great extent by boys, who, after swimming and diving for a long time, would plunge into the cold water, thence back into the warm, and thus alternate frequently for an hour or more. I need not say that I would not advise this course; and lest I should be misunderstood with respect to the duration of time I have recommended in some cases, I repeat that the *maximum* time of the first baths should be twenty to thirty minutes, and that the extension should be gradual and systematic; and further, that the symptoms should be watched, the pulse consulted, the tongue inspected, and the secretions attended to. The additional remarks I have to make will be arranged under the diseases to which this water is applicable, or in which its use is contra-indicated; but here I would say to

the profession, that when they send patients to the Warm Springs, they should impress upon them that a regular *course* of 3, 4, 6 or 8 weeks may be necessary, alternating, perhaps, with some of the drinking waters, according to the indications and the distinctions I have attempted to draw. I urge upon them that this water is not only a luxury, but a bath of great and decided powers, and that they should place it, where it assuredly deserves to stand, in the very foremost rank of the watering places of Virginia.

The Hot Springs, Warm Springs, Berkeley Springs, Capon Springs, Sweet Springs, Red Sweet Springs, and the Healing Springs, (if they are ever improved,) gushing from the base of our Appalachian mountains, are and will be, I trust, for countless ages, sources of health and comfort to the inhabitants of these happy states, and of just pride to our own favored Virginia. One noble effort on the part of our legislators—an effort amply sustained and desired by their constituency—and we shall not only see those favored regions teeming with plenty and wealth, but that plenty and wealth flowing through a thousand arteries to invigorate our seacoast cities and enrich the whole commonwealth.

The waters of Wildbad are those to which the Warm Springs bear the greatest resemblance. There are several works that treat of those waters to which the profession have access, and therefore I will not detain them by extracts. All the diseases successfully treated at Wildbad, may also find relief here under similar circumstances and precautions. At the head of those diseases stands *rheumatism*. I have already said that in this disease, in many of its chronic forms, the hot bath

is the most prompt and potent remedy; but I again repeat that there are other cases in which a lower temperature is more efficacious. In these the advantages of the warm bath are obvious; I need not dwell upon them. The same remarks apply to *gout* and *neuralgia*. In all three, the Warm Springs and the Berkeley Springs will be found admirable agents, if judiciously administered.

Hepatic engorgement and induration would be well treated here, though in bad cases the *hot douche* at the Hot Springs is the best remedy. *Chronic diarrhœa* and *dysentery* are sometimes relieved and sometimes aggravated. Amenorrhœa and dysmenorrhœa are benefited; menorrhagia is contra-indicated. Women with the catamenia, or pregnant, should not bathe. All chronic diseases of the skin—lepra, elephantiasis, herpes, pemphigus, urticaria, acne, ptyriasis, &c., &c., are more properly treated with this bath and alum water from the neighborhood, than by any of the bathing waters. To these we may add scrofula, in its varied and distressing aspects; *paralysis*, not idiopathic, muscular contractions, old injuries, pains from gun-shot or lacerated wounds, stiffness of joints, may experience relief.

In plethora, apoplexy, hæmorrhage of all kinds, inflammations of internal organs, debility, vesical catarrh, diabetes, internal abscess, phthisis, dropsy, scirrhous or cancer, organic disease of the heart, varicose veins, hypochondria and hysteria, idiopathic epilepsy, chorea, monomania, insanity, these waters are contra-indicated.

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